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ADDRESSES.

EMPYEMA IN CAMP GEORGE H. THOMAS.

Annual Address delivered before the Pittsburg Academy of Medicine, Dec. 2, 1898

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CHICAGO.

The short, decisive campaign with Spain just ended was characterized, from a medical standpoint, by the smallness of the number of those killed in the field, the prevalence of disease and the large number of deaths from this source. The brilliant victories on land and sea which forced Spain to sue for peace have cost us so far over three thousand lives—less than three hundred from the effects of bullets and over two thousand nine hundred from disease. The number of deaths from disease will be increased materially, as the different military hospitals at home and abroad still contain a large number of our sick, many of whom will succumb to the diseases contracted during the campaign. Even in case the hostilities are not renewed, it is impossible to predict the total loss of life at the present time, to say nothing of the thousands who will never recover the health they brought into the service. The unusual amount of sickness which prevailed among our troops, in our home camps and at the seat of war, can be attributed to various causes. The call to arms came at a time of the year when bronchial affections, pneumonia, pleuritis and rheumatism are prevalent. In the State camp of the Illinois troops cerebro-spinal meningitis made its appearance during the first days of their encampment. Typhoid fever had its origin in our State camps and followed our army to the National camps and to the seat of war in Cuba and Porto Rico. The accumulation of large armies and the prolonged encampments in localities which lacked a system of sewerage, could not fail in promoting the local spread of infectious disease. The invasion of Cuba occurred during the rainy season, which had a deleterious effect on the health of the unacclimated troops, rendering them more susceptible to the effects of the semitropical climate and the prevailing diseases. The transportation facilities for the unloading of the transports were utterly defective in furnishing the invading army at the proper time with the necessary supplies. The clothing of our troops was not adapted for the Cuban climate. And, lastly, the necessary precautions to protect the troops against yellow fever, which is always found on the Cuban coast, where the landing was effected, were not carried into effect. The commanding general had been fully advised by the Chief Surgeon of the Army in the Field, but the instructions were ignored in the haste and tumult of the brief campaign. A lack of a good knowledge of sanitation on the part of many of the medical officers, and especially the inadequate policing of the camps, had their influence in promoting the local spread of disease. Amebic dysentery and malaria, the two tropical diseases to which our troops were exposed in the southern camps and in Cuba and Porto Rico, figured largely in the sick and mortality reports. The prevention of these diseases was beyond the control of the medical department. The ordinary camp diarrhea, from which almost every participant of the war suffered to a greater or lesser extent, I am satisfied, did much to increase the receptivity of our soldiers to typhoid fever infection.

Another matter of the greatest importance concerning the health of our troops was the regulation government ration. The food selected and furnished for the army in Cuba and Porto Rico was the same as that which had been used in the North. Every one who served at the front for any length of time must be convinced that the emaciated, starved condition of our soldiers who returned from Cuba, and who escaped disease, was largely due to the nature of the food upon which they had to subsist. The purchase of food at the seat of war was out of question. Investigation will undoubtedly prove that many of the canned meats did not contain the amount of nutriment claimed for them. Fresh meat and black bread furnished the continental armies are not only more palatable, but also more nutritious than the canned meats and hardtack furnished our army. A careful inquiry into the kind of food our occupation armies should be furnished, is one of the most important duties of those who are in charge of the commissary department. Another subject of special importance is the special diet for the sick.

It is to be hoped that the medical department will be consulted concerning these matters, and that the recommendations made will receive the well-merited attention of the military authorities. During my service, I met one of our soldiers who served under General Gordon in his advance on Khartoum, who informed me that during that campaign the British troops were supplied, on the whole, with much better food than was the case in Cuba. England has benefited by long experience how to conduct a campaign in a tropical climate; we are novices in this kind of warfare, but have learned enough during the last six months to enable us to take better care of our troops, should we again be called upon to conduct a war beyond the limits of our country.

I have deemed it appropriate and advisable, in accepting your kind invitation to deliver the address at this annual meeting, to discuss briefly and from the most practical standpoint, a surgical affection which I had an opportunity to study in a most satisfactory manner during my service at Chickamauga. It is my purpose to occupy my allotted time by relating my experience with empyema in Camp George

H. Thomas. I was on duty as chief surgeon in that camp for nearly four weeks during the months of May and June. During that time the camp was occupied by nearly 40,000 men, representing nearly all of the States east of the Rocky Mountains. With the exception of one company of cavalry on guard duty, the army was composed entirely of volunteers. The days were hot, the nights cool; the midday temperature frequently reached 98 to 100 degrees F. The drouth which prevailed at that time rendered the roads dusty, the clouds of dust being only settled occasionally by showers of short duration. Camp diarrhea, dysentery, cerebro-spinal meningitis, pneumonia and typhoid fever were then the principal diseases we had to contend with.

It is one of the complications of pneumonia—empyema—as observed in Camp George H. Thomas, that I desire to discuss this evening. Empyema represents the pathologic product of suppurative pleuritis. Suppurative pleuritis is always the result of a pyogenic infection of the pleura sufficient in virulence to give rise to pus formation. In the absence of traumatic causes it appears clinically and pathologically either as an isolated inflammation of the pleura or as a more or less remote complication of pneumonia. Bacteriologically speaking, suppurative pleuritis can only result from the presence in and the specific action upon, the tissues of the pleura of pyogenic microbes in sufficient number and virulence to give rise to a suppurative inflammation.

Non-traumatic, suppurative pleuritis is a comparatively rare, isolated affection; in the great majority of cases it presents itself as a complication of pneumonia. Recent investigations tend to prove that the essential cause of pneumonia is either Fränkel's pneumococcus, Friedlander's bacillus of pneumonia (diplo-bacillus) or the streptococcus pyogenes. Streptococcus pneumonia, occurring either as a primary or secondary affection, is characterized clinically by the gravity of the disease and pathologically by the tendency to pus formation. The microbes of pneumonia discovered and described by Fränkel and Friedlander are the bacteriologic agents usually found in the inflamed tissues in croupous pneumonia. Both these microbes possess feeble intrinsic pyogenic properties, and when, during the pneumonic process, abscess formation or suppurative pleuritis sets in, the complication occurs usually as the result of a secondary or mixed infection with pus microbes. Croupous pneumonia is a self-limited disease, and when febrile symptoms persist after a sufficient time has elapsed for the disease to complete its typic cycle, it is usually an indication that mixed infection has occurred, and in this event it becomes the urgent duty of the attending physician to look for, locate and determine, if possible, the nature of the complication to enable him to institute timely, appropriate therapeutic measures.

In suppurative pleuritis complicating pneumonia, the inflamed lung tissue is seldom involved in the suppurative process. Resolution may proceed in a satisfactory manner at the time and after the suppurative pleuritis has set in, a fact which would tend to prove that the parenchyma of the lung is more resistant to the action of pyogenic microbes than the tissues of the pleura, or that these microbes find their way more readily to the pleura than into the pneumonic focus after secondary infection has occurred. The complicating secondary pleuritis manifests itself usually about the time the crisis is expected or a few days later. It is evident that suppurative complications in cases of pneumonia would be likely to appear in cases in which the tissues are rendered susceptible to the action of pus microbes and under circumstances which would supply the bacteria for the secondary, mixed infection.

Both these conditions were present and operative in Camp George H. Thomas. The health of many of the men encamped at Chickamauga was impaired soon after reaching camp by the sudden climatic changes, change of food, malaria and camp diarrhea. Nearly all cases of pneumonia were characterized by the gravity of the symptoms and a tardiness with which resolution occurred. Camp Thomas was located on the government reservation ten miles south of Chattanooga. The ground is undulating and in part well wooded. Numerous clearings and open spaces furnished excellent facilities for the drilling and maneuvering of the troops. The National Park is traversed by a sluggish stream, the Chickamauga. Three regiments of cavalry and a number of batteries were in camp during the month of June, the time the five cases of pneumonia complicated by empyema came under my observation. The ground is intersected by numerous roads which during the season of drouth which prevailed at that time, became covered with inches of fine dust, which by driving of innumerable vehicles of all kinds, the marching of troops the passage of cavalry and artillery would rise in dense clouds and by sudden gusts of wind would often cover the entire camp. This dust was contaminated by pathogenic microbes of all kinds, which could not fail in finding their way into the air-passages of the occupants of the camp. The dust was most abundant near the roads on which there was the most travel that is, near headquarters.

It was not strange that most of the cases of pneumonia originated in localities where the dust clouds were densest, filling the tents and kitchens and covering the food supplies. The dust had undoubtedly some influence in the causation of pneumonia, and more particularly in determining the frequency with which it was attended or followed by suppurative pleuritis.

Many of the soldiers left their State camps affected by bronchial catarrh, which constituted a potent predisposing cause to pneumonia. This was particularly true of some of the regiments from Illinois. Naturally the first regiments arriving at Camp Thomas were quartered near the great thoroughfares of travel and those arriving later in more remote parts of the camp. It is a noteworthy fact that those regiments farthest away from headquarters were almost free from pneumonia, while those nearest the center of travel furnished the largest number of cases. The cool nights, the lying on the moist ground and the inadequate supply of blankets did their share in serving as potent exciting causes. Some definite information in reference to the distribution of the disease can be gained by considering the location of the division hospitals, and the number of cases of pneumonia treated in each one of them. The division hospitals were located as near the center of the respective divisions as possible.

The First Division Hospital was established on the Lafayette Road, about three-quarters of a mile from the headquarters of the corps. The Second Division Hospital was established about two miles from head

quarters and about one-quarter of a mile from any principal thoroughfare, the Brotherton Road being the nearest one. But few of the regiments of this division were encamped on roads subject to much travel.

The Third Division Hospital was located at the junction of the Alexander's Bridge Road and the Jay's Mills Road, about two miles from headquarters. Some of the regiments of this division were quartered on roads which were used by the wagon trains hauling water, consequently frequently exposed to clouds of dust.

During the latter part of May and the month of June forty-six cases of pneumonia developed in the First Army Corps. These cases were distributed among the division hospitals as follows: Hospital at Headquarters, 4 cases; First Division Hospital, 32 cases; Third Division Hospital, 10 cases. The Second Division Hospital was not established until the middle of June, and from that time on until the end of the month not a single case of pneumonia was reported. Careful inquiry at the regimental hospitals failed in finding a case previous to the establishment of the division hospital. This was the division encamped almost entirely away from any of the principal roads, hence least subjected to dust-infection. It will be noticed that 32 cases, or nearly 70 per cent. of the entire number, occurred in the First Division regiments. Out of these forty-six cases six died, or a mortality of 13 per cent. The six fatal cases came from the First Division. In three of these fatal cases death was caused by the progressive extension of the septic pneumonia, and in the remaining three death was caused by complications. In one case death was attributed to a typhoid condition; in two to cerebro-spinal meningitis. The septic nature of the cases of pneumonia which developed in the First Division is best shown by the frequency with which empyema attended or followed the pulmonary disease. In this division empyema complicated the pneumonia in nine out of the entire number of thirty-two cases, equal to 28 per cent. Four of these cases were treated at the Leiter Hospital and four at the St. Vincent's Hospital, Chattanooga. Five of these cases were operated upon by myself: four at the St. Vincent's Hospital and one at the Leiter Hospital. The following case represents the pathologic conditions found in these cases as well as the surgical treatment which was resorted to in meeting the indications of the empyemic complication:

W. F., private, Third Ills. Vols., was taken suddenly ill while on drill, May 30. The attack was initiated by nausea, vomiting, dizziness and a sense of great prostration. On the following day severe diarrhea set in, which, in connection with persistent vomiting and intense headache, influenced his physician to transfer him to the division hospital. At that time physical examination revealed a well-marked bronchitis. In the evening he had a decided chill; temperature 103.

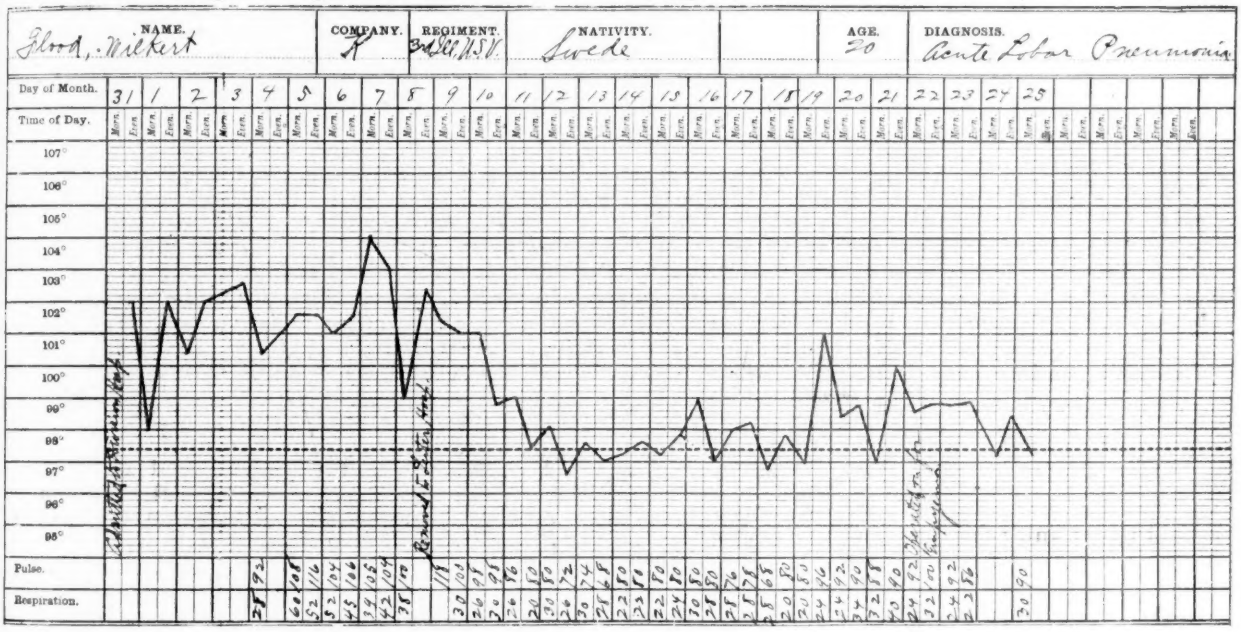
June 1 he complained of severe pains in his chest and back, cough dry and hacking, sputum tinged a rusty color. Diarrhea continues; slight delirium; temperature 99 in the morning, 103 in the evening.

June 2. Chest pains not relieved, sputum more deeply tinged. Temperature varies from 101.5 to 103.

June 3. Diarrhea under control; cough and expectoration unchanged; delirium and temperature about the same.

June 4. No material change in the condition of the patient; tongue dry and dark brown.

Daily examinations of the chest did not reveal any signs of consolidation of the lung until June 6. At this time the middle and a part of the upper lobe of the right lung were found consolidated. Temperature 102.



Record of variations of temperature beginning May 31, 1898, at Leiter Hospital.

June 7. Patient delirious most of the time; cough harassing, and copious expectoration of rusty sputum. Temperature rose rather suddenly to 105.

June 8. Cough less troublesome, sputum more scanty; subjective symptoms improved. Patient was transferred to the Leiter General Hospital, when on his arrival the temperature was found to be 102.4. The medication at this time consisted of strychnia in small doses, muriate of ammonia 5 grains every four hours, alternated with 3 drops of turpentine. Under this treatment the temperature was reduced 1½ degrees during the first day, 2 degrees the second, and 1½ degrees the third day, becoming normal June 11. Carbonate of ammonia was substituted for the muriate at this time.

From June 12 to 18 the temperature ranged one degree above and below normal. The pulse, which had been 118 beats per minute and feeble on his admission to the Leiter Hospital, became fuller and stronger and diminished in frequency to 80.

June 19. Temperature suddenly rose in the afternoon to 102, pulse 96.

June 20. Examination of chest showed absolute dulness on the right side, extending as high as the fourth rib. The appearance of fever after a few days of complete defervescence

and the rapid increase of the area of dulness, displacement of the apex-beat to the right, as well as a marked bulging of the lower intercostal spaces, left no doubt of the existence of empyema. The symptoms indicating the presence of this complication were so evident that it was not deemed necessary to resort to an exploratory puncture to verify the diagnosis.

In all of the cases of pneumonia complicated by empyema that came under my personal observation, the disease pursued a very similar course to the one described. The clinical symptoms were characterized by their severity. The patient's general condition left little doubt as to the septic nature of the original disease. As in the case detailed, the suppurative pleuritis commenced two to three days after the pneumonic symptoms had subsided, its onset being announced by a rise of temperature and the appearance of local and general symptoms, suggestive of the existence of a suppurative affection.

It is more than probable that in most of these cases the pyogenic microbes, which eventually attacked the pleura and caused the suppurative process, entered the lungs at the same time and in the same manner as the microbes which caused the pneumonia. The bronchitis and diarrhea which initiated the disease were plain evidences pointing in this direction. In some of the cases in which the pneumonia pursued a more typic course, the subsequent suppurative pleuritis was caused by a secondary mixed infection. All cases of empyema which were subjected to operative treatment were characterized pathologically by the presence of an abundant fibrinous exudate, which covered both the visceral and parietal pleuræ, and, in the form of large fibrinous masses, mixed with the thick cream-like pus. The purulent accumulation occurred rapidly, filling the pleural cavity in a very few days. Displacement of the heart, enlargement of the chest and bulging of the intercostal spaces were the most significant local signs indicating the presence of a large quantity of pus in the cavity of the chest. The right and the left sides were affected with about the same frequency. In one case the pleuritis was limited, leading to a circumscribed empyema in the left side. The abscess occupied the lower and posterior part of the chest. In performing the radical operation in this case, a section of the tenth rib, about three inches from the spinal end, had to be excised. The location of the empyema was determined beforehand by systematic exploratory punctures, the first two punctures yielding negative evidence. As a rule, expansion of the compressed lung followed soon after the operation, showing that resolution had occurred before or after the pleuritic complication appeared.

In some of the cases suppuration was scanty after the operation; in others it was abundant. In the former event a process of repair set in promptly; in the latter case it was retarded. The final process of obliteration of the pleural cavity was accomplished by granulation, cicatrization and cicatricial contraction. Evacuation of the pus and drainage were always followed by a fall in the temperature to normal, or nearly so, accompanied by symptoms denoting rapid improvement of the patient's general condition. In two of the cases the physicians in attendance were misled in their diagnosis by the absence of fever. The pleuritis was initiated as usual by a rise in temperature and other febrile disturbances, which subsided in a few days, the patients feeling well with the exception of the complaint of embarrassment of the respiration. In one case the respiration was so much interfered with by the copious pleuritic exudate that the lips were blue and the pulse almost imperceptible —conditions which necessitated the performance of the operation without an anesthetic. We relied in this case on strychnia and whiskey to counteract the immediate effects of the operation. In the absence of such contraindications ether was used as an anesthetic, aided by the administration of some heart stimulants immediately before the administration of the anesthetic.

OPERATION FOR EMPYEMA.

The existence of an empyema in the adult is a sufficient indication for the performance of a radical operation. Puncture and removal of the pus by aspiration may succeed occasionally in mild cases of suppurative pleuritis in the case of children; seldom, if ever in the adult. Operative treatment should be instituted as soon as a diagnosis can be made. Unless the signs and symptoms are conclusive, the diagnosis should be verified and the pus accurately located by an exploratory puncture, as was done in most of the cases operated upon in Camp Thomas. Nothing is gained and much is lost by postponing surgical treatment until the accumulated pus has increased to the extent of producing serious and often irremediable compression of the lung on the affected side. The plastic exudate, which is often copious, as in all the cases forming the basis for this address, is another source of danger in case the operation is not promptly performed, as it creates conditions unfavorable to the subsequent expansion of the compressed lung and extenuates indefinitely the infection.

In view of the pathologic anatomy presented by the cases of empyema which constitute the basis for this paper, it must be admitted that the only rational treatment consists in opening the pleural cavity freely and in establishing efficient tubular drainage. Intercostal incision and drainage do not enable the surgeon to remove the large fibrinous masses which play such an important rôle in maintaining suppuration and in preventing speedy obliteration of the pleural cavity. The fibrinous exudate contains pus microbes, and unless removed at the time the operation is performed, serves as a nutrient medium for their growth and reproduction and interferes mechanically with pulmonary expansion and speedy obliteration of the pleural cavity by granulation and cicatrization. One of the important modern indications in the surgical treatment of empyema is to remove the inflammatory product as thoroughly as possible, and this can only be done after opening the cavity sufficiently to remove by mechanic measures the infected exudate. In recent cases resection of two inches of one rib at a point where drainage will be most effectual will afford sufficient room to subject the pleural cavity to a thorough removal of the inflammatory exudate. With the exception of the case of circumscribed empyema, we opened the chest in the axillary line where the ribs are nearest the skin and usually resected the seventh rib. With one exception, aspiration was performed a day or two before the operation for the purpose of securing partial pulmonary expansion before admitting air into the pleural cavity.

Preliminary aspiration is of special value in the treatment of large empyemic cavities. The surface of the entire chest was thoroughly disinfected and every care taken to carry out full aseptic precautions

during the operation. The opening of large pus cavities is attended by great responsibility, and this is more especially true in empyema, as secondary infection is liable to occur unless the operation is performed under strictest aseptic precautions. If an anesthetic is given, the greatest watchfulness is required to guard against accidents. I always prefer to perform the operation under partial anesthesia, and I am very partial to strychnia and alcohol as valuable adjuncts in minimizing its immediate and remote dangers.

I place the patient partially on the opposite side with the chest slightly raised, and the arm on the side to be operated upon raised to the side of the head for the purpose of increasing the width of the intercostal spaces. I expose the rib to be resected by a slightly curved incision with the convexity directed downward, beginning the incision at a point corresponding with the upper border of the rib, carrying it in a gentle curve to the lower border, and terminating it at the upper border at a point about four inches from where it started. By reflecting the cutaneous shallow, oval flap in an upward direction, the muscular covering of the rib is exposed. A straight incision over the center of the rib, about three inches in length, is then made down to the bone. With an elevator the periosteal envelope with the tissues attached to it is then separated, taking care to lift out from its groove the intercostal artery with the tissues to be reflected. After laying bare the rib to the extent of at least two inches, the rib is lifted forward with the elevator and excised with a strong pair of bone-cutting forceps. If the diagnosis is positive, all that remains is to make an incision with the scalpel in the center of the periosteal trough, large enough to admit the tip of the index finger.

The evacuation of the chest contents should always be done slowly; this can be done most effectually by interrupting the flow of pus from time to time by inserting the index finger into the pleural incision. After evacuation of the pus and loose shreds of fibrinous material, the pleural cavity should be carefully examined by direct inspection and digital exploration. Plastic exudates attached to either pleura must be removed as thoroughly as can be done with finger and a small gauze sponge held securely in the jaws of a pair of long, preferably slightly curved, forceps. The membranes should be removed by mopping and not by the use of sharp instruments. Scraping of the pleuræ with a sharp spoon is superfluous and occasionally detrimental. In acute cases I have often noticed quite free hemorrhage from the pleural surfaces even after gentle efforts to dislodge the adherent fibrinous exudate. Should troublesome hemorrhage follow the procedure, packing of the pleural cavity with one long strip of plain sterile gauze should at once be resorted to. The space below the drainage opening is packed first, and if the hemorrhage is not arrested, the balance of the cavity is packed from above downward.

Tubular drainage is the ideal method of draining a suppurating pleural cavity. I use for this purpose two fenestrated tubular drains, the size of the little finger, about four inches in length and securely fastend together with a large safety-pin. Drains have been repeatedly lost in the pleural cavity for want of resorting to this simple precaution. After inserting the tubular drain, the external wound is sutured in the usual manner. The curved incision, as described above, not only exposes the ribs more freely than the straight incision, as usually practiced, but it is also much better adapted for prolonged drainage.

I never irrigate the pleural cavity the day the operation is performed. I do so later, provided suppuration continues. In case irrigation of the pleural cavity becomes necessary, care is necessary in the selection of the antiseptic solution; carbolic acid and corrosive sublimate in the usual strength are dangerous, and should never be used. I make use of either a saturated solution of the acetate of aluminium or Thiersch's solution. Both of these solutions are efficient as an antiseptic and non-toxic even when used in large quantities. The value of the double drain is made apparent when it becomes necessary to irrigate the pleural cavity. By placing the patient on the opposite side, the fluid which enters the chest through one tube escapes through the other as soon as the cavity is full, thus washing it out thoroughly. By placing the patient on the affected side the cavity is emptied, when the same procedure is repeated until the solution returns clear. The solution used should always be heated to blood temperature, as irrigation with a cold solution is fraught with danger.

The external dressing should consist of a thick cushion of sterile gauze and absorbent cotton to absorb the fluid as fast as it escapes, and to provide the wound with a filter to prevent post-operative infection. The best way of keeping the dressing in place and to prevent the entrance of unfiltered air into the cavity, is to substitute for the ordinary bandage the rubber webbing bandage. Change of dressing and antiseptic irrigation become necessary as often as the dressing becomes saturated. For the purpose of obviating frequent changes, the dressings should be ample.

As the cavity diminishes in size the drains are shortened from time to time, and sooner or later one of them can be dispensed with. Premature removal of the drain is often followed by relapse. Drainage must not be suspended until the surgeon can satisfy himself by careful examination that the pleural cavity has become obliterated.

Should the lung fail to expand sufficiently in the course of a few months to place the cavity in a condition for definitive healing, Schede's thoracoplastic operation is the operation of choice, as Estlander's multiple rib resection has not yielded the expected results in the practice of many operators, including my own. It is well for the surgeon to keep close watch of the size of the cavity during the after-treatment. It has always been my custom, at stated intervals, to place the patient on the opposite side, then fill the cavity with one of the antiseptic solutions used for irrigation, then evacuating the chest by reversing the position and measure the quantity of fluid removed. By recording the results of such measurements, we are in a position to judge with mathematic precision the size of the cavity, and determine whether or not healing is possible without further and more serious operative interference. Prompt and progressive improvement followed the operation in all of my cases of empyema operated upon in Camp Thomas. In most of the cases suppuration was soon under control, followed by speedy pulmonary expansion and permanent healing of the empyemic cavity by granulation. In two of the cases a recent examination made by Dr. A. F. Lemke showed that the patients recovered their former health.

Our limited means of making a satisfactory bacteriologic examination of the inflammatory product made it impossible to ascertain in each case the nature of the microbic cause of the suppurative complication. In two of the cases, inoculation of proper nutrient media resulted in an abundant growth of the staphylococcus pyogenes aureus. I have but little doubt that in most, if not in all cases, the suppurative pleuritis developed in consequence of a secondary infection with pus microbes, probably in most instances with the staphylococcus, as indicated by the clinical course of the disease and the nature of the inflammatory product. The etiologic relationship of dust to pneumonia, and especially the pleuritic complication, must be regarded as established by the facts related above.

The influence of dust in the causation of pneumonia and suppurative pleuritis acts in two ways in the causation of these diseases: 1. The mechanical irritation of the bronchial mucous membrane resulting from the presence of ordinary dust renders the epithelial layer of the bronchial mucous membrane more permeable to the entrance of pathogenic microbes. 2. Pathogenic microbes, and in this case pus microbes, are suspended in the dust and find with it entrance into the air-passages.

The importance of early radical operative intervention in the treatment of empyema can not be overestimated. The only efficient treatment in such cases consists in opening the cavity of the chest freely by rib resection, removal of inflammatory product and establishing free tubular drainage, followed by safe and efficient irrigation, should subsequent suppuration demand it.

CHAIRMAN'S ADDRESS.

Presented to the Section on Stomatology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY G. V. I. BROWN, M.D.
MILWAUKEE, WIS.

It is my pleasure, as your chairman, to give the first greeting to the Section of Stomatology of this ASSOCIATION, and also to our confrères in joint session, the Colorado dentists, among whom I trust it may be the inaugural of long and beneficial intercourse. Stomatologists in fact we have long been, I am sure, but to be so recognized by title is a long step forward in the direction toward which, from year to year, those who have carried the burden of the vast amount of work necessary to this Section have labored, and is certainly worthy of general congratulation. We no longer serve under the somewhat limited, almost ambiguous term of "oral surgeons," but are hereafter to be recognized as those having understanding of the science of the mouth, a tribute complimentary to the scientific character of papers which, published side by side in the journal of this ASSOCIATION with the essays of the most learned medical and surgical lights of the day, have gained the respect of the other branches, having given those who treat diseases of the mouth their only opportunity to exchange ideas directly with the medical world, the influence of which, in discovering to it the possibilities of applying the technique of the skilful dentist, in conjunction with a knowledge also of surgical procedure and medical science, can not be overestimated.

The address of your chairman, Dr. Andrews, last year, in following out the idea of an anniversary celebration, has told the story of the earnest few, the authors of our being, so completely that reference to the history of the Section is unnecessary. It seems, however, that his suggestion as to the necessity for united efforts being made in the interest of sanitation, in having the mouths of school children regularly examined by regular practitioners of dentistry and, in a general way, instruction given as to the care they ought to receive, is worthy of reiteration in order that the idea may not escape entirely. An effort made in my own home during the past year to carry out the plan has not proven thus far of any practical value, but constant agitation and repeated effort will undoubtedly accomplish much that is at first apparently impossible.

There is another line of duty to which I would respectfully call your attention, which also calls for united effort in order that our objects may be furthered. As we all understand, the essential idea of this Section is that dentists shall also be graduates in medicine, therefore properly entitled to the benefits accruing from association and consultation with physicians. There is a difference of opinion as to the advisability of having the student take the medical degree first and the special degree in dental surgery afterward, or vice versa, but there can be no question of the importance and little, if any, of the necessity of having both. Unfortunately for this desideratum, the difficulty of accomplishment is most unfavorable, owing to lengthening of the required course of instruction for recognition by the National Association of Medical College Faculties and the National Association of Dental Faculties; while with each it is a mark of progress toward higher education, and the probable effect, so far as the Section of Stomatology is concerned, and the advance of both professions into that interlying field, fast becoming of value to each, bids fair to completely abort, or at least inhibit a promising growth in future usefulness. The number of years of study required is becoming, not only quite beyond the possibility of the average student to attend, but more extensive than the benefits to be derived from the practice of our special branch will warrant, in comparison with other departments of medical science. Therefore, the natural result will be that the student of the near future must decide either to be a dentist, pure and simple, without a degree in general medicine, or be obliged to become an oculist, an aurist, a rhinologist or a practitioner, limited to some one or more of the other special fields of medicine for which he can equip himself with one year, or perhaps a little more, of study after graduating at some medical college, and even if he takes a short postgraduate course abroad, as so many do, will yet have perhaps expended less time and money than would be required to complete his attendance at a reputable dental school.

When this Section was first organized and recognized by the AMERICAN MEDICAL ASSOCIATION it was possible to complete the required course for the degree of D.D.S. in two years, then get an advanced standing in the medical college and receive the degree of M.D. in one year afterward. Today the National Association of Medical Colleges requires four years for graduation, and the dental faculty association three years, with the prospect of an additional year in the near future—now under consideration. It has already become a matter of some difficulty for a graduate of

either school to be allowed advanced standing of even one year in the other, so that under the most favorable circumstances it requires five years' study to acquire both degrees at the present time, with every likelihood of the sixth year being added. Thus it seems not altogether improbable that, without adjustment of the difficulty, the Section of Stomatology may become almost limited in its active usefulnesss to the lives of present members.

I believe the good work done by this Section already, and the far-reaching benefits resulting from the great advance due to an understanding of the nature and treatment of diseases of the mouth, applied in a scientific manner, by association with other departments of medicine, have established the fact beyond the peradventure of a doubt, that from a clinical and scientific standpoint it has earned the right to urge upon each side that an effort be made to further the protection of further influence, by modifying for the purpose, in a reasonable manner, the exacting requirements upon those who desire to be fully equipped with both degrees. To take the medical graduate in one year through the necessary technique of operations upon the teeth, in order that he may become an accomplished operator in that short time is almost impossible. To require students of the dental college to take a full course in anatomy, physiology, chemistry and all the fundamental branches, the same as medical students, has been proven to be, for the average individual quite too much in addition to his mechanical instruction, having a tendency to cause neglect of the latter, but in dental schools that are connected with medical colleges and universities, it is always possible for a student, willing to make unusual effort, to take the regular course with the medical student, and at the same time fulfill the requirements of his dental studies and laboratory work. For such, the reward and encouragement should be that, having passed the same examinations, with an average equally as high as his medical brother, he will receive credit for those branches and be exempt from future examinations, so far as they are concerned, when he undertakes the study of medicine, also that the dental student so educated shall receive some mark of distinction in his degree, which will serve to note the difference in his favor over other graduates in dentistry, and that the holder of such a degree be allowed to finish his course of medicine in at most two additional years. On the other hand, medical students at colleges where both branches are taught may avail themselves of the opportunity to do required work under the instructions in dental operative and prosthetic technics, and having done so, be admitted to the senior year of a dental class with credit allowed them for this work done, even though it had been done while a matriculate in the school of medicine. Such an arrangement would in no wise tend to let down the bars in either profession, and would without doubt encourage many students to make this effort, the enviable result of which would be more fully educated men and a greater number brought up directly in line with the purpose of this Section.

The bibliography of the past year, in its valuable additions to science from members of our profession, particularly of this question, invites discussion in a most alluring manner were time and and your patience sufficient, but in order that all may not escape, and because of special interest to myself as bearing upon a subject, the clinical aspect of which has for some time been the object of my investigation, I desire to call attention to the photographs of microscopic sections recently shown by Dr. J. Leon Williams of London, in line with others by Talbot and statements by Black demonstrating that the blood- and nerve-supply of the peridental membrane of the tooth is something quite different from that which is depicted in the illustrations of Gray and other anatomic authorities, clearly showing as they do, nerve filaments and nerve fibers communicating directly with the peridental membrane of the tooth from the main nerve-supply, a most important clinical consideration. Last year before this Section, in my paper on "The Hyper Kinesis of the Muscles of Mastication," I endeavored to call attention to the fact that tooth-grinding or extreme pressure of the jaws, caused by irritation of the nerve-centers controlling those muscles, was a common etiologic factor intimately associated with neuralgia of the trigeminus, and other pains of the head, particularly in those forms of the headache which are the accompaniment of neurasthenic conditions. Since the writing of the paper referred to a number of very interesting cases have come under my charge, in which the character of the pain had been mistaken for reflex of uterine diseases, and for which there had been one or more operations performed in the hope of relief, but without success, which in every case was afforded by correction of the source of irritation, discovered to be in the mouth. In one case there was evident a condition such as might be attributed to what is known as eye-strain, and I desire to introduce at this time the expression "jaw-strain," as applied to a similar general condition resulting from an irritable weakness of the nerve-centers controlling the muscles of mastication and the trigeminal branches directly affected which, without going into more minute explanations, are easily accounted for by an examination of the photomicrographs referred to. Since through the peridental membrane we have as direct a connection with the main nerve-supply as had long been supposed to be through the apical foramen of the pulp of the tooth only, tooth-grinding could have produced an equivalent condition to that of eye-strain, which several writers claim to be the cause of at least 50 per cent. of all cases of hystero-epilepsy and other disorders of nervous origin.

Full of hope, strong in the faith that the essays before us—to which in closing I invite your attention—will add their mite to benefit mankind in the alleviation of suffering, and filled with a deep sense of our several obligations, I thank you for courteous attention, and the honor of addressing you in my present capacity.

ORIGINAL ARTICLES.

DIET IN DISEASE.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHARLES H. SHEPARD, M.D.

BROOKLYN, N. Y.

There is no function of the human body so essential to its existence as the process of digestion, and it may be stated as a fundamental proposition that those foods having a natural proportion of the elements of nutrition are the most desirable for maintaining a correct balance of the system and retaining its vigor.

No infringement of this law is tolerated. When we attempt to nourish the body on any one element of food, such as starch, sugar or fat, it is sure eventually to prove a failure, and bring on gastric disturbance and functional incapacity. Whenever an excess of even the simplest and most appropriate kind of food is taken, the digestive organs become overtaxed. If this excess is persisted in, nature refuses its assistance and allows that which it can not utilize to remain unappropriated, from lack of digestive fluid to complete the process, and from being unacted on it soon ferments and entails manifold and untoward consequences. The large amount of fluids secreted by the different glands and mucous membranes prevent putrefaction and aid in the distribution of nutriment to the proper channels to sustain life. This shows the intimate relation between diet and disease. In fact, a carefully regulated diet has, in numberless cases, proved one of the best, if not the very best, corrective of disease.

In this land of plenty there is an enormous waste of food material by all classes, but of all wastes the worst is that of excessive eating, not only because it destroys the food, but for the reason that it produces many of the diseases that are attributed to other causes. When we consider how much suffering of body and mind results from systematically abusing the stomach, it will be understood and admitted that our people are great sinners against the laws of health. It is acknowledged by the best authorities that mankind as a rule in this country partake of about double the quantity necessary for the highest condition of health, and it should readily be seen that plethora can be quickly and safely reduced by abstinence, with water, warm or cold, to dilute and wash out the surplus. Inasmuch as our bodies are made up of what we eat and drink, and our health and happiness is largely dependent upon the proper selection of our food, no reasonable mind can for one moment doubt that our health is made or marred by that selection, and it becomes us as sensible beings to make a study of the subject, if haply we may thereby secure the maximum of physical vigor and intellectual force, for it is in proportion to his mental clearness that a man succeeds or fails in the many struggles of life. Both the quantity and quality of food are important, so that mankind shall be neither overfed or underfed, and thus preserve a happy medium that contributes to the most perfect condition of health.

Just so soon as people learn and obey the laws of health will they begin to realize and obtain the fulness of days which is their due, and which is estimated by many to be over one hundred years. If man had what he is entitled to, the birthright of a clean, vigorous constitution, which never comes of reckless parentage, and then could be brought up under the most sanitary influences, this would be the minimum of his years. The time will certainly come when it will be considered a disgrace to be sick, for that condition is only brought about through a transgression of nature's laws.

It is evident that as we progress in intelligence and refinement our food standard changes. Perhaps it would be more correct to state that as man improves in his dietetic habits he will advance physically, mentally and morally. Today, not only is less alcohol used with food than in former years, but fruits are more and more in demand, and it is equally true of grains and vegetables, and doubtless many of the great variety of nuts will be found desirable, to the further exclusion of animal food. Nuts are fat-forming, heat- and force-producing, and more nutritious than animal foods, and are not open to any suspicion of disease-production. The nut-growing industry is of increasing importance and will be found largely remunerative in the not remote future. Then nuts will take high rank among the foods of our people. As compared with the nourishment they give, fruits and nuts have the least proportion of earthy salt. Animal flesh comes next, then vegetables, and fourth in rank we have cereals and pulses, which are shown to have the largest amount of earthy matter.

A union of the cereals with fruit, vegetables and animal food has so far produced the most satisfactory results, though the mass of mankind enjoy life and are well nourished without animal food. The educated Brahmin lives very simply, often upon one meal a day. As man advances toward a higher plane, he inevitably tends toward what, for want of a better term, may be called vegetarianism. Those capable of the greatest endurance subsist mainly upon the products of the earth. The Grecian athletes, who made the glory of the Olympian games, were trained on vegetable food. Those were the days when the Grecian outlines were the standard of physical beauty, both in face and figure. The eminent Professor Virchow says, "the future is with the vegetarians."

The first requisite in our diet is that of pure water. Man can live many days on water alone, for we are mostly made up of water, and disease can be quickly washed out of the system by taking nothing but pure water. This has been many times demonstrated. Impure water has been the cause of some of the most fatal epidemics. Another important requisite is that of pure milk. In infancy we live on milk alone, which may be called a perfect food, containing as it does all the elements of nutrition. Another important requisite is good bread, but when it is made principally from the starch portions of the grain, with the phosphates and other nutritive elements excluded, it is very far from being the "staff of life," as it is sometimes termed. The most perfect bread is made of the entire wheat, not too finely ground, and mixed with pure water, adding nothing but a little salt, and then baked in a quick or hot oven. This is the primitive form of breadmaking and contains all the nutriment of the grain. The greater the departure from this standard the more undesirable, from a health point, does the bread become. The more bread is raised by leaven or yeast, the greater is the destruction of the elements of nutrition. When we consider how much the popular bread of the day is robbed of its life-giving principle, it is not so much to be wondered at that the unsatisfied craving for perfect nutrition leads to the saloon and a thousand other ills. More than one physician thinks that the enormous increase in diabetes in this country is due to our modern way of living, and particularly the use of fine flour in bread and other preparations, which is deprived of a large proportion of the most important elements of nutrition. It has been many times demonstrated that children fed largely on white flour bread are found to be deficient in the bone-forming elements, and this is plainly shown in the teeth. Another thing that militates against the teeth of our people is the habit of using so much soft food. If we do not use our muscles they become weak and flaccid; so with the teeth, they decay and become

useless, the gums soft and the teeth loose. The reason we need the tooth brush so much, and have to call upon the dentist so often, is because of the large use of food that does not require mastication.

The most untoward results come from feeding infants and children with unsuitable elements of food, and at times allowing them substances such as common salt and lime, that by no possibility can be utilized as food. That so many live after passing through the ordinary ordeal demonstrates the wondrous vitality and power of resistance of the human race to morbid influences. Chlorid of sodium, or common salt, is by no means identical with the salt contained in fruits and vegetables; in these it has been organized and fitted for appropriation to animal life. From recent experiments in Europe, there is strong presumptive evidence that common salt, in excess, produces renal troubles leading to Bright's disease. Lime also, an important element in the formation of the teeth and bones, can not be utilized in the crude form of mineral lime; on the contrary, it delays and interferes with digestion, but in the organized form, as found in the whole wheat grain and other cereals, as well as in fruits and vegetables, it is prepared in the most perfect manner possible for the building up of the human framework, as these elements become digestible only after their assimilation by plants suitable for human food.

While condiments and seasonings are very popular, the fact remains that they are entirely innutritious, and serve to foster an artificial appetite. They destroy our appreciation of the finer flavors of the foods. At the same time they prove injurious to the health, by irritating the lining membranes of the digestive tract, and thus creating as a natural sequence an artificial demand for alcoholic mixtures. It is said of one of the Roman emperors that his taste became so vitiated that his food was necessarily seasoned with asafetida, in order that he might realize some taste of what he ate. Undoubtedly many of the vices that injure society and eventually result in crimes have their beginning at our own tables. We certainly can not expect to build up a strong vigorous constitution, capable of resisting disease, by feeding on ice cream, rich pastries and sweets. They do not furnish the bloom of youth. On the contrary, it has been found by reliable experiments that by providing the kind of food that goes to the nourishing of blood and muscle, the development of children has been forwarded to a remarkable extent.

Dr. Springer of Berlin announces that extracts from cereals, obtainable everywhere, are the best bone builders, and therefore well adapted to the growth and perfection of children. Here is his recipe: "Take two soupspoonfuls each of corn, barley, oats, rye, maize and bran, boil in four quarts of water three hours, allow to cool and then strain. If necessary add enough water to make a quart. A palatable yellowish fluid is obtained, which may be improved by the addition of milk for children." The results with several children placed under his care surpassed his anticipations. This has the merit of being equal in value to any of the extensively advertised food-nostrums of the day, and is much less expensive. Secret foods should no more be encouarged than secret medicines, for some of them are simple frauds, particularly the so-called diabetic foods, and others are dangerous to the sick and well alike. The worst of all are the alcoholic beverages masquerading under the name of malt. The best and most economical food materials for universal consumption are those in common use, and which need no fancy names. One authority says, in an attack of summer diarrhea in children under two years of age, all albuminous and starchy foods should be prohibited. It is the mature opinion of expert physicians that at such times, milk and the milk foods only tend to furnish fresh fuel for the growth of pathogenic bacteria in the gastro-intestinal tract. Give instead nothing but toast-water or barley-water for thirty or forty-eight hours. They contain plenty of nutrition for such conditions, and rarely produce any disturbance.

The list of foods that are said to be useful for this or that disease is almost unlimited, from onions, spinach, asparagus, cranberries, lemons, to figs, apples, grapes and prunes. Eczema has disappeared upon a discontinuance of starch foods and a substitution of fresh and dried fruits, milk, eggs and olive oil. The fact that a special line of diet is often curative for a large class of diseases is fully demonstrated by the different "cures" that are established in many countries, such as the grape cure in Southern France, the whey cure in Switzerland, and the koumiss cure of Southwestern Russia, and there are so-called fruit cures. Apples, oranges, lemons, bananas, prunes, tomatoes, etc., have been utilized at different times and in different ways for such purposes. The milk cure is another claimant for favor, and the dry cure, which consists in gradually reducing the amount of fluid taken into the system, also has its advocates, and there is the vegetarian cure as well as the beef and hot water cure, all of which have many followers, that seek the same end through different means. Fruits are among the most beautiful productions of nature, satisfying the esthetic taste as well as the palate. The purest water is contained in them. Their sugar is abundant and harmless, their acids cooling, refreshing and corrective of many untoward conditions of the body. The up-to-date physician recommends them largely, and they have been used to counteract the alcohol habit. The demand for fruit today is not only much greater, but a much superior quality is required than was prevalent thirty years ago.

An exclusive diet of fresh fruit for breakfast, without much change in the other two meals, has been found successful in relieving indigestion. One author claims to have cured himself of serious stomach troubles by means of this régime. The writer has made a trial of this plan for more than a year past with pleasing results. A short time ago a physician claimed that one meal a day of prunes was most beneficial to the nervous system, and would even make criminals more tractable. It is related of the Emperor Nero that he ate greedily of onions and garlic to improve his voice. Grapes are nutritious and the juice is said to contain sugar, tannic acid, bitartrate of potassium, tartrate of calcium, common salt and sulphate of potassium. The use of unfermented grape juice is deservedly increasing and taking the place of alcoholics in the practice of some of our ablest physicians. The delicious grape fruit is reputed to be a rival to quinin in the treatment of malaria, and the blackberry has long been considered as a sovereign remedy for summer complaints. The German analysts say that the apple contains a large proportion of phosphorus, and is admirably adapted to renewing the essential nervous matter of the brain

and the spinal cord. The old Scandinavian traditions represent the apple as the food of the gods, who when they felt themselves growing feeble and infirm, resorted to this fruit to renew their powers of mind and body. Those who cultivate the habit of eating a great deal of fruit are the gainers both in health and appearance, though it is well to heed the Spanish proverb, "Gold in the morning, silver at noon, and lead at night."

A water diet, or an entire abstinence from solid food for a limited time, and using water freely, has proved efficacious in a multitude of cases, especially in removing old tumors and enlargements of certain parts, such as goiter, etc., showing that the inherent vitality was sufficient to relieve the system of disease when the overplus was cut off and the system permitted time to eliminate the morbid accumulation.

An English magazine reports of the Northumbrian women, who came of a large framed race, and whose work lay in the fields, that they were hearty and buxom on a diet of oatmeal and milk, but as having sadly degenerated, become paler in color, stunted in size, and less capable workers, because wheat flour had supplanted oatmeal, and cheap tea taken the place of milk. . . . Tea is injurious when taken with or shortly after meals, because the tannin it contains tends to coagulate the albumen of the food undergoing the process of digestion. . . Meat, fine flour bread and tea are the staple articles of food for a large part of our foreign-born population, as well as for some of the natives, and their children are fed in the same manner when quite young. This form of diet produces as a result, a pale, sodden complexion, dull eyes, flesh with no firmness, and individuals without stamina. . . . Children are more sensitive to nervous stimulation than adults. Their nervous system is extremely delicate. Even a slight irritation in the alimentary canal is sufficient to throw the child into violent convulsions. Therefore neither tea nor coffee is a fit drink for children. It is more than probable that the common use of these narcotics during childhood and youth is one of the factors that in later years produce the army of neurasthenics. It is stated by travelers in Brazil that the free use of coffee by the inhabitants is bringing about an evident deterioration of the people. This is conspicuously shown in their complexions and their nervous systems. By irritating the nerves that govern the heart action, coffee quickens the circulation, and in many cases induces cardiac palpitation. There are a few persons upon whose nervous constitutions coffee acts in the same way as alcohol.

It is frequently noticed that both improper quality and quantity of food has directly produced disease. When the horse, the cow, and many other animals are sick from overwork or exposure, they refuse their food, and when they begin to eat it is recognized that convalescence is at hand. This object lesson is worthy of imitation by the higher animal, man. Just so far as a departure is made from the laws of health, will the penalty be suffered, and this calls to mind the fact that in the South the planters are attempting to utilize for their cattle some of the dregs of their sugar mills, called "black strap." This may apparently work well for a time, but as it is not their natural food, in the end it is liable to result disastrously, as has the feeding of cows on "still slops," only it may come in a different form of disease.

That life and health are appreciated as priceless is shown by the American public in a misguided manner, when it pays two hundred million of dollars annually for proprietary medicines. "All that a man hath will he give for his life," but he who pays out money for patent medicines is paying more for death than life. More and more it is believed that strength of body conduces to strength of mind and morals. Young men and women gladly place themselves on a restricted diet when training for some game or enterprise, and thereby receive many an object-lesson in the value of certain kinds of food to enhance or destroy their powers of endurance. The judgment that this or that plan of diet is the proper thing to ensure success makes it a pleasure even to those who have been educated in a vastly different school. How much more will the great majority of mankind, when they come to realize that the problem of life is dependent on the kinds of food and drink they habitually use, learn to enjoy those things which the judgment of scientific research tells them are conducive to their higher development and health, and thus shall we not only find that a consistent diet aids in the cure of disease, but in a larger measure tends to the prevention of disease. As a rule, however, most of us learn these facts through the medium of painful personal experience. Certainly a subject fraught with such important consequences is worthy of earnest study, and happy are they who early learn the lesson, and thus avoid many of the pitfalls of our day, and pass on to a serene old age. A good authority says, "Every one dies before his time. This is not strange, for during his whole existence, from the cradle to the grave, a human being, even if in good circumstances financially, is surrounded by unhealthy conditions. He eats scarcely anything that is not adulterated, wears hardly anything but what is shoddy, and ignorantly neglects both personal and public cleanliness. 'Cheap, let's get it cheap.' Purity is the last consideration, and no matter at what age he dies, he has by this constant use of adulterated products, been deprived of several years of life." Most truly did Seneca say, "Man does not die, he kills himself." An English authority, in speaking of the alimentation of old age, says that in advanced years the stomach can no longer endure the strong food of former days. The period of decline is characterized by several changes, both in the voluntary and involuntary muscles of the body. A want of tone affects the circulation generally, the digestive system becomes weaker, and the mental powers share in the decreasing vitality. For healthy old age the body should be lean and spare, like that of a school-boy, the foods being reduced in quantity and animal food restricted. If the decline in energy is not met by a corresponding diminution of the demands upon it, the result is sure to be an accumulation of fat, and retrograde changes, producing gout and rheumatism. In advancing age the food consumed should approach that of youth, and in second childhood, a return be made to the bread and milk of early days.

The hereditary vigor with which all are endowed, some more and some very much less, is what may be called personal equation, and may easily explain how it is that some individuals can go on transgressing the laws of health in a most reckless manner and yet outlive others who are most scrupulous in the care of their health. The fact is that many of the latter have found themselves obliged to lead a careful life, else they would have to pass on altogether. Those who squander their stock of vitality, never see the fullness

of their days, and their children, if they are unfortunate enough to have any, are still shorter lived. It is what we eat and drink that makes or mars our condition. If we partake only of the pure, we shall be clean and pure thoughout. If on the contrary we handle the unclean and attempt to build up with gross material, it will result in uncleanness, disease and death.

Those who are seeking to retain their health as well as those who desire to regain it, must necessarily observe simplicity in their diet, and uniformity in the time of meals: The highest efficiency of the forenoon work is not promoted by a hearty breakfast, nor is a hearty luncheon helpful to the afternoon duties. For those who are actively engaged during the day, the evening seems most desirable for the principal meal. For centuries this has been the practice of the people of many countries. Nothing should be eaten between meals, nor when the body is exhausted. Scientific experiments have demonstrated that fatigue is a disease, and that it is possible to produce the same symptoms in one animal by inoculation with the fatigued serum of another, showing that overwork produces an actual poison in the system. Worry is equally antagonistic to good digestion. A little rest and banishment of care in preparation for a meal should become a habit. It means preserved health and lengthened life. Three meals a day are ample, many flourish on two, and for some persons one meal a day has been found sufficient. With good food, and the best is none too good, well cooked, and well masticated, the stomach will do justice, especially if only gentle exercise is indulged in for an hour or more afterward. The digestive process usually occupies the stomach from two to three hours. It is always better to eat too little than too much, this is proved by common observation. Indigestion and nightmare are the penalty of over-indulgence. It is not in the quantity eaten that one is benefited so much as in the amount that is assimilated and appropriated for the needs of the body. Nature's mode of saying that the system is in no condition to take care of what may be forced upon it, is indicated by a want of appetite. The eating of candy is pernicious because of the sugar of which it is made and the inopportune times it is usually partaken of as well as the poisons which it sometimes contains. Nothing but pure water should be partaken of between meals or when one is inclined to enjoy exercise before breakfast. There will be more general invigoration if the stomach is not then called upon to work. The morning hour is a choice time for either mental or physical exertion, as it follows a long period of rest and recreation, and the stomach is quiet. Ordinarily there is but little work done after the late and hearty dinner, and as there is but little tissue waste during the hours of sleep, and that is the time when assimilation is most perfectly carried on, the body has then sufficient energy accumulated and stored up to meet all demands of the morning's pleasure or exercise. Any severe exercise is best taken on an empty stomach, because then the nervous energy is free and can be concentrated on whatever is desired to be accomplished, but when the stomach contains an undigested meal, a portion of vital energy is required for the work of digestion, and the more it is interferred with the worse it is for the individual concerned.

He who desires the supreme vigor of health, can have no use for alcohol, tea, coffee or tobacco. With pure water, well-chosen wholesome food, the exclusion of all narcotics, and clean habits, together with our bracing climate and active pursuits, and the intermixture of the most enterprising races of the world, the American people should develop into the highest type of individual, family, and national life.

Fortunately the application of science to daily living is on the increase. Education is beginning to affect domestic life and in the near future our people may learn how to prepare a diet that will promote their health and development. The cooking schools are an indication of progress in this direction. There is no reform movement that appeals so directly to our daily needs as reform in diet, and herein the physician may find a field for some of his noblest work, when considered from the standpoint of morality and hygiene. What we shall eat, and what we shall drink, are ever recurring problems, and upon their wise solution largely depends the health and happiness of mankind.

81 Columbia Heights.

THE IMPORTANCE OF A PROPER DIETARY FOLLOWING LAPAROTOMY.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

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We propose to divide the subject into three heads: the dietary preceding, the dietary at the time of, and the dietary following the operation.

In order to be correctly understood we define a laparotomy to be any surgical operation performed upon the contents of the abdominal cavity at any point between the ensiform cartilage of the sternum and the symphisis pubis. And we propose to draw also the line of distinction between the operation performed on the organs contained therein and the other viscera, from the fact that the dietetics should be different from those necessary in cases of appendicitis, and operations performed upon the stomach and intestines. From an experience that covers a number of years, both in private and hospital practice, we are disposed to attribute the fatal results following operations on the abdominal cavity, more to the neglect of a proper dietary than to the direct result of the laparotomy. The surgeon who performs the operation is not to blame, but the one who has charge of the patient before and after the operation.

Before any operation is performed, for at least ten days, the patient should be prepared for the operation by a proper diet. The *prima viæ* from the buccal cavity to the anus should be thoroughly emptied and cleansed by antiseptics and aseptics. Not a single particle of extraneous matter should be left. After this cleansing process has been completed a fluid diet should be commenced and kept up until the hour for the operation has arrived, when all dietary measures should cease until the operation has been completed; then a plain nutritious fluid diet should be kept up until the patient is dismissed. If it be a gastrotomy, a gastro-enterostomy, an enterotomy, or the removal of an appendix, the diet required in these cases is one by enema in preference to per orem, for reasons too plain to mention. On flushing the colon and as far up as the sigmoid flexure, you can give nourishment in all these flushings, with the exception of the one used to relieve the flatus and gaseous distention of the

intestines, which should be of simple hot water sterilized.

Supporting the system by nutritious enema is almost an unknown quantity among surgeons. Only those who have had practical experience are competent judges of its beneficial influence.

What we mean by nutritious enema are enema composed of sterilized milk, wine-whey, animal broths, etc., introducing into these enema any antiseptic that the surgeon may deem necessary. As surgeons we have not respected the digestive glands of the intestines sufficiently. We have not been disposed to give the stomach or intestines involved as much rest as they demand or require when being repaired by the surgeon. We have depended more upon the *vis chirurgical* and ignored the *vis medicatrix naturiæ*, or the neglect of giving Nature, Dame Nature, the privilege of exercising her proper functions of recuperating energies. Many fatal results from the various laparotomies performed at the present day are the direct result of ignoring Mother Nature.

In operations upon the ovaries, kidneys, uterus and liver we can allow more generous diet, and can give well-digested fluids and solids, but in cases of stomach and intestinal operations we must adhere strictly to a fluid diet, given in small quantities and not too often repeated. Especially is this true where a section of the intestine has been removed. In this operation, as in a fractured rib, we require to apply adhesive strips to control the respiratory muscles. So in the enterotomies, we must prevent the peristaltic action by not inviting it by the administrations of food. Keep the stomach empty and let it rest until the intestinal wound has healed, which is but a short time. The laparotomist approaches his case with a good deal of confidence of success if his patient has had a careful dietetic preparation for the operation, and if he is certain that the dietetic precautions will be adhered to until convalescence has been completed. Too many operators are reckless and careless, and beget as a result, failure—failure invited by their reckless procedure. Too many are anxious to operate, regardless of the condition of the patient. Nowhere within the domains of surgery is the aphorism truer than in the saying, "haste makes waste."

Prepare your patients for the operations. I had rather amputate a limb upon a full stomach and bowel with assurance of success than to plunge my knife into an intestine or appendix with the same stomach and bowel loaded with their contents. Fortunately for humanity our noble profession is working up along this line. The day is not far distant when any form of laparotomy will be a comparatively safe operation, provided due regard has been had to the dietetic part of the treatment. More credit is due to that careful and painstaking physician who prepares his patient for the operation and then leads him safely through a proper dietary following than to the operator who does the work. All true surgeons will admit this. Examine the statistics of all laparotomies performed in this and the old country, and their history attests the truth. Of course we have no reference to those cases where an immediate operation is demanded. Fortunately, these cases are but the exceptions to the rule that governs proper treatment in the majority of cases. Every year has proven in its results the necessity of a proper dietary. Successful results are so sure to follow a proper dietary that it will soon be that any surgeon who neglects it should be held responsible and subject to prosecution for malpractice. There is no excuse under the heavens for reckless surgery, or for a surgeon who ignores the recuperative powers of nature. Who is so egotistic as to believe that his own surgical procedure wil be vindicated by an offended nature? In the language of the immortal, illustrious Gross, "Respect nature, gentlemen, respect her. Relieve her of any dead parts, but for God's sake don't attempt substitution on her." Good, pure water is fine food, is easily digested and contains tissue properties. Good milk properly prepared is nutritious and safe, wine-whey is good, peptones and peptonoids are, to say the least, doubtful. I had rather my patient live on nothing than to use them in many cases.

Total abstinence is a fine diet in many cases. I never knew a laparotomy patient to die from starvation, but I have known them to die from overfeeding and neglect of a proper dietary.

THE IRRATIONAL AMERICAN BREAKFAST, JUDGED BY OUR PRESENT KNOWLEDGE OF THE PHYSIOLOGY OF DIGESTION.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY BOARDMAN REED, M.D.

PHILADELPHIA.

A witty Frenchman once remarked in substance that Americans partook of a dinner at breakfast time. It is a fact that on the continent of Europe it is the almost universal custom to break the fast in the morning with a very light meal consisting generally of little, if anything, besides rolls and coffee or chocolate. In no other country, probably is so hearty a breakfast eaten as in these United States. This may or may not be prominent among the hygienic faults that make Americans the most dyspeptic people in the world, but it is doubtless one of the causes. It is not reasonable to expect of the digestive organs as energetic and efficient work in the early morning as later in the day. The circulation is then less active and the nervous system not yet aroused to its fullest energy. One would naturally suppose, therefore, that the gastric, pancreatic and intestinal juices would not be so readily supplied in the quantities necessary to digest a very hearty meal at the breakfast hour as some hours later. Healthy, vigorous persons, who exercise much out of doors, can so adapt themselves, no doubt, to the habit of beginning the day with a heavy meal, and such persons may not be the worse for it; but it is different with dyspeptic and delicate people from whatever cause. These nearly always do better when given some light nourishment soon after awakening, their first substantial meal being taken at a later hour.

But this beginning of the day with a large complicated meal, scarcely less in extent and variety than the dinner, is not the only dietetic error of which the majority of our people are pre-eminently guilty. The relative order in which the average American takes the various kinds of foods entering into his generous breakfast is in defiance of the teachings of physiology. For example, it is well established that the digestion of starch is begun by the action upon it of the ptyalin in the mouth, as well as on its way to the stomach and during the first twenty or thirty minutes of its sojourn in the stomach—that is to say, while the gastric contents continue to be either

neutral or only faintly acid. The percentage of acidity at which starch digestion is arrested is stated differently by different authorities. Ewald and Boas found it retarded by .07 per cent. of hydrochloric acid and stopped by .12 per cent. Chittenden states that it is stopped by .003 per cent. This is reached by the normal stomach at the end of the first fifteen or twenty minutes after the beginning of a meal and in much less time when the secretion of hydrochloric acid is excessive, as it very frequently is with dyspeptics. When meat or an animal broth forms one of the earlier courses of the meal, the stomach contents become acid sooner than when milk or vegetables or cereal food is taken. It follows then that our amylaceous foods when forming part of a mixed meal should: 1, always come in the earlier courses, and 2, be as thoroughly masticated and insalivated as possible, so as to insure a prompt conversion into the forms of sugar in which only they are capable of absorption and assimilation.

The breakfasts which are served in most of the better-class American hotels, as well as in a large proportion of the wealthier private families in this country, begin with fruit (often highly acid kinds, such as grapes, oranges, or grape fruit), followed by some form of mush (largely starch) washed down with milk or cream, and with scarcely any admixture of the saliva. Enough of the sour fruit has often been taken before to render the stomach contents too acid probably for the digestion of the farinaceous foods to take place, even if any saliva—the only fluid capable of digesting them which they can encounter before entering the duodenum—had been incorporated with them. In the table given by Boas as representing the results obtained by both Ewald and himself, the organic acids are credited with a decided power of inhibiting the digestion of starch, though less than that exercised by hydrochloric acid.

The third course is usually beefsteak or mutton chops, which, in the normal stomach are almost sure to stimulate the secretion of the gastric juice to a degree which carries the acidity of the stomach contents above the starch-digesting point, supposing that the acid fruit of the first course has not already done this. To render it still more impossible that any further starch digestion should take place in the stomach at this stage of the breakfast, most persons, including children and healthy young adults having presumably an abundant gastric secretion, are usually encouraged to stimulate their peptic glands to a still greater secretion of the acid gastric juice by a free use of pepper, hot sauces or other condiments. If the meats were taken without accompanying or following starchy foods, it would not be so bad, but as a rule potatoes and hot bread in some form are eaten at the same time, and very often the meal is topped off with griddle cakes and syrup, one of the most indigestible and flatulent of the combinations of carbohydrates.

Another peculiarly American habit is the drinking of ice-water, often in large quantities, with every meal. This retards digestion, both by lowering the temperature of the contents of the stomach and by an over-dilution of the gastric juice. It is also capable of damaging seriously the delicate mucous membrane and ultimately causing catarrhal inflammation in patients otherwise predisposed to that affection. Is it any wonder that Americans so generally suffer from stomach troubles, and especially from the manifold consequences of the indigestion of starch?

If one must eat so large a meal in the morning, the viands might be served in the following order with much less risk of harm: 1, cereals well masticated and accompanied by rolls or bread and butter to carry down plenty of saliva; 2, potatoes with more bread and butter if desired; 3, meat or eggs, accompanied by a little salad; 4, fruit; 5, coffee or chocolate.

A NEW THERAPEUTIC MEASURE—THE ELECTRIC-LIGHT BATH.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. H. KELLOGG, M.D.

BATTLE CREEK, MICH.

In a paper read before the American Electrotherapeutic Association. at its meeting in New York City, in September, 1894, I presented a description of a new method of applying heat to the body, using, as the source of heat, the incandescent electric light. I also gave in this paper the details of many experiments which I had conducted for the purpose of determining the physiologic effects of this bath, and also a comparison of the effects obtained by this bath with those obtained by the Turkish and Russian baths. The general conclusions to which I was led by this investigation were as follows:

1. The electric-light bath stimulates the production of the elimination of CO_2 in a very marked degree. In an electric-light bath lasting for thirty minutes, the percentage of CO_2 elimination during the last ten minutes was 5.13, as compared with 3.60, the average of CO_2 elimination before the bath. In a Russian bath the percentage of elimination was 3.96. In a Turkish bath of thirty minutes' duration the percentage of CO_2 elimination was 4.01.

2. The elimination of nitrogenous wastes, represented by urea, and also the elimination of total solids, was greatest in the Russian bath and least in the electric-light bath, doubtless the result of excessive skin activity.

3. The amount of perspiration produced by the electric-light bath was fully double that induced by the Turkish bath in the same length of time. The time required for the first appearance of perspiration was, in the electric-light bath, about one-half that in the Turkish and Russian baths. The reason for this is apparent when one recalls the fact observed by Bouchard, that perspiration begins when the temperature of the blood has risen .7 degrees F. above the normal. In a study of the physiologic effects of the electric-light bath in 1891, when I made my first experiments upon this subject, I found the internal temperature was raised by the bath 1.6 degrees F. in five and a half minutes, the surface temperature rising in the same time 2.3 degrees F.

From these facts it is evident that the electric-light bath raises the temperature of the blood more quickly than any other form of bath. The reason for this is apparent when it is remembered that the skin and other structures of the body readily permit the transmission of the radiant energy of the electric light, which, entering the body as light, becomes by the resistance which it meets transformed into heat. This heat is developed in the deeper tissues instead of being slowly carried in by conduction from the surface. The skin is, like glass, a poor conductor, but at the same time allows the passage of radiant energy

in the form of light. This fact explains the readiness with which perspiration is induced by the electric-light bath.

Prior to my own experiments upon this subject there had been, so far as I can ascertain, no scientific study of the physiologic effects of the electric light upon human beings. William Siemens, in 1880, published a paper giving an account of some very interesting experiments which he had made for the purpose of determining the influence of the electric light upon plant life, from which he drew the following conclusions:

1. That the electric light is efficacious in producing chlorophyl in the leaves of plants and in promoting growth.

2. That an electric center of light equal to 1400 candles, placed at a distance of two meters from growing plants, appeared to be equal in effect to average daylight at this season of the year (March), but that more economic effects can be attained by more powerful light centers.

3. That the carbonic acid and nitrogenous compounds generated in diminutive quantities in the electric arc produce no sensible deleterious effects upon plants enclosed in the same space.

4. That plants do not appear to require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected during the daytime to sunshine, and during the night to electric light.

5. That the radiation from powerful electric arcs can be made available to counteract the effects of night frosts, and is likely to promote the setting and ripening of fruit in the open air.

6. That while under the influence of the electric light, plants can stand increased stove heat without collapsing, a circumstance favorable to forcing by electric light.

Numerous observations have also been made by other persons, among whom the first the first to make experiments was Hervé-Mangon (*Compt. Rend.*, liii, 243). These experiments showed that the electric light was capable of producing the development of chlorophpyl and inducing heliotropism, or the phenomenon of turning or bending toward the light. Experiments made in 1869 by Prillieux (*Compt. Rend*, lxix, 410) showed that the electric light is capable of promoting assimilation in plants or decomposition of carbon dioxid and water. In 1889 and 1890 a series of very important experiments were conducted at the Agricultural Station of Cornell University to show:

1. That the electric light may be used under such conditions as to make it fairly comparable with sunlight in its power to promote protoplasmic activity.

2. That the electric light acts as a tonic to plants so that they are able to endure adverse conditions which otherwise would cause them to collapse.

3. That the electric light is a true vital stimulus, since the effect of its use at night upon plants is essentially the same as that of the longer day of the Arctics upon plants growing in those regions.

These observations agree with those of Siemens, made some years before, in which it was shown that a plant exposed to ordinary daylight and six hours of electric light in addition, "far surpassed the others in darkness of green and vigorous appearance generally." Strawberries and other fruits were fully equal to those raised under ordinary conditions, and grapes were of stronger flavor than usual. Melons were remarkably large and aromatic, and bananas were pronounced by excellent judges to be "unsurpassed in flavor."

It has been known for many years that workmen engaged in electric-light plants, or otherwise exposed to the influence of powerful arc lights, sometimes suffer effects similar to those of sunstroke, showing that the electric light is capable of producing profound impressions upon the nervous system and the tissues of the body in general. It was a knowledge of these facts that led me to undertake investigations which finally resulted in the development of the electric-light bath. Having engaged in sanitarium work for more than a quarter of a century, in which time I constantly made use of the sun bath, as well as other modes of applying heat to the body, I thought

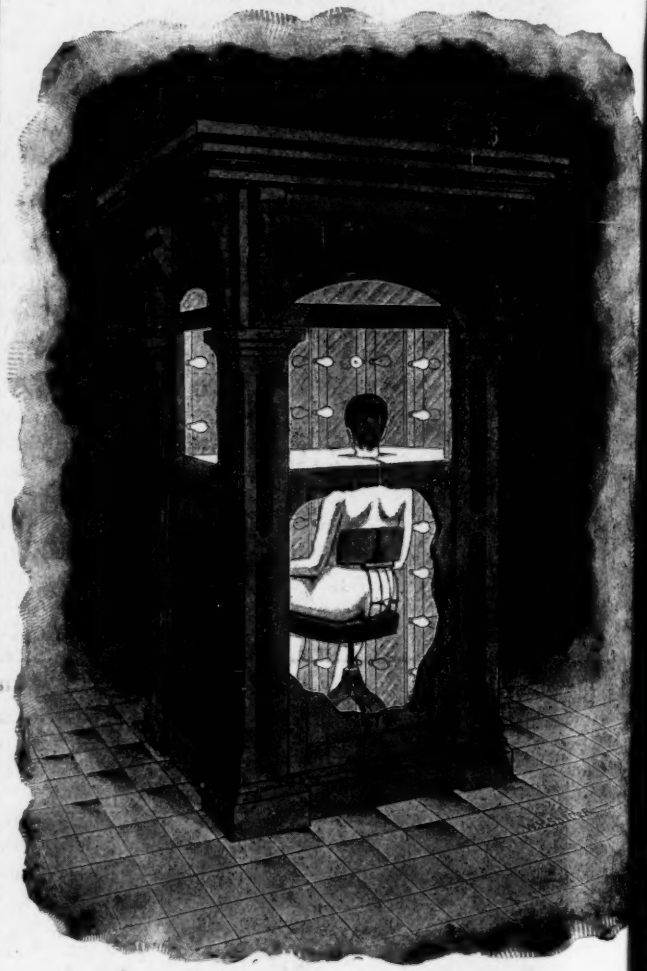

Fig. 1.—Upright cabinet for electric-light bath.

it worth while to make careful investigation of the value of the electric light as a source of thermic energy. I had constructed, as early as 1891, various experimental forms of baths which I have gradually perfected. Some of these admit the whole body in a sitting posture, others lying down. Some are adapted to the application of heat to a circumscribed portion of the body, as the trunk, the feet or the spine. The accompanying cuts show the several forms of bath that I have in use at the present time. These baths are now employed in various places in this country and in foreign lands.

The electric-light bath has been received into special favor in Germany. Professor Winternitz, the greatest living authority on hydrotherapy, speaks as follows respecting the electric-light bath in his re-

cently published treatise, "Physiologische der Hydrotherapie": "The electric-light bath is a method of recent origin and equal to the sun bath. It was at first employed empirically. (Only the arc light was thus employed, and in the most inefficient and unscientific manner.) Dr. Kellogg of Battle Creek has constructed one for the entire body, as well as for the separate parts thereof. Various shaped cabinets are supplied with mirrors internally and a great number of electric lights. In the center of a large cabinet is a chair upon which to place the patient; in a still larger cabinet an entire bed can be admitted with the patient in a lying position, thus enabling the light to be thrown on the entire body. In Germany one can see in certain places, Chemnitz (Dresden) instead of the small electric lights, arc lamps (carbon) without glass, placed in the corners of the large cabinet.

"It has been undoubtedly demonstrated that radiant heat penetrates the tissues much better than conducted heat, and it is quite probable that cellular activity is powerfully changed by these rays of heat (either qualitatively or quantitatively). The effects of the vapor bath can be brought about in the cabinet, and the differences thus far determined are the following: The giving off of the C O_2 is more abundant than in the vapor bath, and what is especially noteworthy is that the perspiration appears very soon and at a very low temperature, and is very profuse. We notice the earlier appearance at 95 degrees F. (Kellogg averaging 85 degrees F.), while in the vapor bath a much higher temperature is generally required to produce the same effect. The time at which the perspiration in the electric-light bath appears averaged three and one-fifth minutes, while

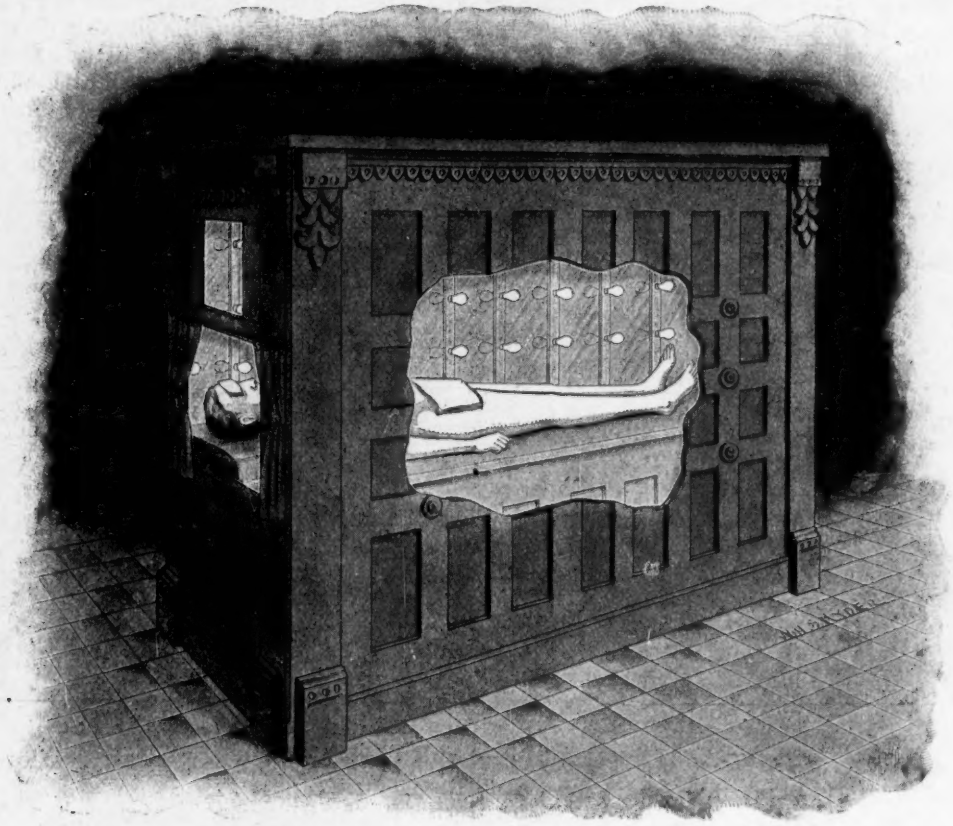

Fig. 2.—Horizontal cabinet for electric-light bath.

"As soon as the electric source is introduced the entire body is flooded by the light, the rays are constantly reflected by the mirrors so that the entire body is very uniformly and intensely illuminated.

"The temperature of the atmosphere in the cabinet varies according to the source of light, and is increased very much by the use of arc lamps (167 degrees F. and over), while by the use of the incandescent or glow light, a slow increase in temperature takes place, and hardly reaches the above-mentioned temperatures. The increase of temperature when globe lights are used may be easily influenced by introducing more or less lamps or globes which have a greater or less degree of exhaustion. Those lights which contain the greatest amount of air give more heat than those which have been more thoroughly exhausted. The effect upon the body is, as far as our limited observation goes, equal to that of a vapor bath, but differs materially from it.

in the vapor bath almost five minutes was required. Finally, the quantity of perspiration in the electric-light bath is considerably larger. That the rays of heat here play the most important part, and that it is not on account of the temperature of the air in the cabinet, is further shown, for instance, by the fact that the external surface of the thighs, which were directly opposed to the light, perspired much more rapidly and profusely than the inner surfaces which received only reflected rays. Within ten to thirty minutes the temperature reached 104 degrees F., pulse 160, respiration 42, with symptoms of fever-like condition. We have thus far employed the electric-light bath, like the vapor bath, only in a few disorders, such as chlorosis, chronic rheumatism and gout, and have obtained satisfactory results. More extensive experience is wanted. Kellogg reports very favorable results of treatment of chlorosis, gout and a number of cases in which there is need of increased

metabolism. Lahman reports regarding psoriasis:

"As we now possess a thermic method in the electric-light bath by means of which we are able to measure the exact dose, and knowing the power influence on cell-life and the entire organism, we believe this method of thermic application should receive an important place. It enables us to influence a number of maladies much more rapidly, better and more intensely than we have heretofore been able to do."

Fig. 6 represents the apparatus as used by Professor Winternitz. Several German manufacturers are making electric-light baths of different sorts, and the bath is rapidly gaining favor among German practitioners. I am sorry to say that in Germany it is also being exploited to a considerable extent by charlatans.

As stated in the paper above referred to, I believe that the peculiar value of the electric-light bath is due to its efficiency as a means of communicating heat to the body. In the Turkish bath, heat is communicated to the body chiefly by the convection of heat and air. Air, being a very poor conductor, communicates heat to the body very slowly. Absorption of heat is further hindered by the skin, an excellent non-conductor, and by the rapid evaporation of moisture upon the skin, whereby it is cooled so rapidly that it is possible for a man to enter and remain for a considerable time in an atmosphere far above the boiling point. I have several times been in a Turkish bath at 300 degrees and suffered no inconvenience. The heat derived from the electric light, however, enters the body by radiation and not by convection.

Fig. 3.—Electric-light spine bath.

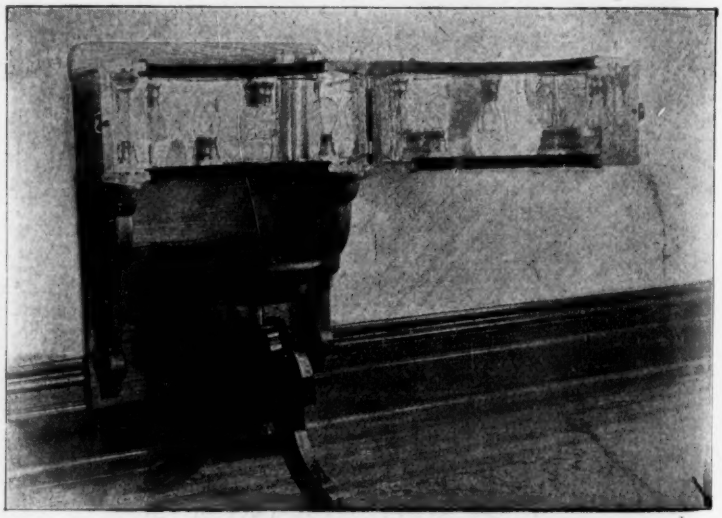

Fig. 4.—Electric-light trunk bath.

The skin, as well as the air, is to a large extent transparent to radiant heat, and the same is true of all the living tissues. This is evidenced by the phenomena of transillumination. By a speculum placed in the vagina or rectum, and a suitably arranged electric light of 16- or 32-candle power placed over the abdomen, one may see the interior of the pelvis illuminated and made to glow with a bright red light, the red color being due to reflection from the red corpuscles of the blood. Even the bones are transparent to light when in a living state. This is clearly shown by placing the hand between an electric light and the eye with the fingers in close contact. The hand being placed near enough to the light, the whole finger will be seen to be illuminated by the light and not simply the soft parts. Light penetrates the body in the same manner as it penetrates any other transparent or translucent medium. In case of the water bath, Turkish bath, vapor and hot-air baths, heat reaches the interior of the body by conduction, passing through successive layers of living tissue which, while affording great resistance to conduction of heat, readily allow the passage of the luminous rays from the incandescent film. It is true that non-luminous as well as luminous heat waves are thrown off by heated bodies, the whole gamut of radiant energy in the form of heat being stated to consist of fully four octaves, more than two of which are below the red, while a whole octave is above the violet, the luminous range occupying a space only a trifle greater than what would correspond to a chord of the sixth in music. But the lower octaves of these heat waves seem to be far less active than those included within the luminous area and above it. I do not consider that there is any specific effect obtainable from the electric light which would not be derived from any equally efficient source of radiant heat, and on this account I should prefer to use the term the *Radiant Heat Bath* rather than *Electric-Light Bath*, as the former term leaves room for the employment of any luminous source of heat which may possess properties identical with those of the electric light.

In the incandescent electric-light bath perspiration is induced at a temperature of 85 degrees F. The air about the patient is usually the same as the ordinary room temperature, while the Turkish bath requires 150 to 200 degrees F, and the Russian 120 to 140 degrees F. Pure air at ordinary temperature is provided for the patient in the electric-light bath, instead of the heated impure air of the Russian or Turkish bath. The electric-light bath does not depend upon the effect of the heated air surrounding the patient, as in the Russian or Turkish bath, but upon the radiant energy which passes in straight lines from the incandescent filament into the patient's body without heating the air, the air about the patient being of the ordinary temperature; just as a person standing in front of a log fire out-of-doors on a frosty night may expose one side of his body to intense heat, while the other is chilled by the zero atmosphere which surrounds him.

A score or more of these baths are now in use in this country and in different parts of foreign coun-

tries, and with these baths several hundred thousand applications have been made within the last few years, and the results have been such as show that it is destined to be permanently recognized as one of the most effective agencies for combating a large variety of morbid conditions.

In auto-intoxication the electric-light bath is particularly helpful, as it not only stimulates elimination through the skin, but by penetrating the tissues, stimulates the processes of oxidation whereby toxins and waste matters are prepared for elimination. By accomplishing the results required of it in so short a space of time the electric-light bath is comparatively free from the exhausting effects which often result from the Turkish bath, the hot immersion bath and other modes of inducing perspiration. In the treatment of the rheumatic diathesis there is no agent which so promptly affords relief as the electric-light bath, since it adds to the powerful eliminative effects of heat the soothing influence of light upon sore muscles and joints. In obesity, likewise, the electric-light bath proves a sovereign aid through the penetrating power of its rays, which stimulate the processes of disassimilation, while at the same time aiding the elimination of débris.

Fig. 5.—Electric-light trunk bath in use.

Nervous headache, or migraine, now pretty generally recognized as a toxemia, yields readily to the systematic employment of the electric-light bath in connection with the proper regulation of diet. The electric-light bath enjoys the great advantage over other methods of applying heat in that it produces strong atonic effects, at the same time that it encourages powerful elimination.

As a prophylactic, the electric-light bath possesses a high value, especially for persons who are compelled to lead a sedentary life, such as teachers, doctors, lawyers, preachers, judges and professional men generally, and to a still greater degree by the majority of women, and which necessarily results sooner or later in disease and premature death from the accumulation within the body of those poisons which are destroyed or thrown off through active exercise in the open air. The electric-light bath is the best of all substitutes for muscular activity; for persons whose business necessarily keeps them confined indoors, it is the most invaluable means of maintaining sound health. The importance of skin activity as a means of maintaining health is intuitively recognized by the dwellers in the Arctic region. Every Laplander's house has a sweat-room connected with it, in which every member of the family takes a weekly sweat followed by a plunge into a snowbank during the cold and inactive season of the year.

In this country a vast number of people, especially dwellers in cities, are daily suffering from the deteriorating influence of a sedentary life, to whom the electric-light bath, combined with a cold shower bath, would prove an inestimable boon. An especial advantage of the electric-light bath is the comparatively small cost of installation. The Turkish and Russian baths require expensive heating apparatus, furnace, steam boiler, in addition to fireman and engineer and frequent visits from plumber and steamfitter to keep everything in order. The electric-light bath is complete in itself, requiring no greater expense in installation than the running of two small wires for a short distance. The bath can be placed in the back room of an office, or, for private use, may be placed in a bedroom, or even in a bathroom. Another very great advantage is the small expense involved in the maintenance of the bath. After the bath has been installed and connected with the city current, the expense for maintenance is simply the cost of the current. This expense is incurred only while the bath is in actual operation, whereas the expense of the Turkish or

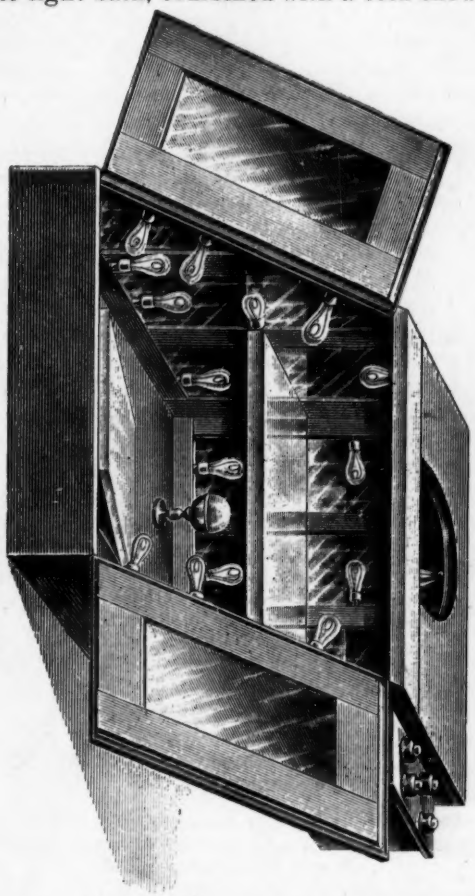

Fig. 6.—Cabinet for electric bath (Winternitz).

Russian bath is more or less continuous, as the bath must be held in constant readiness for use. The usual length of an electric-light bath is from two to ten minutes, according to the effects required, the average length being about five or six minutes. This would make the cost of a single bath 2½ to 3 cents. There is practically no cost for repairs. There is nothing to wear out in the electric-light bath except the lamps, and these are guaranteed to last a thousand hours, which would furnish an electric-light bath every day for fifteen years. The electric-light bath is always ready for use. It is only necessary to turn on the current, and the light shines out instantly, and with its full intensity. Another touch of the button, and the heat is removed wholly or in part, as quickly as it came. Thus the heat may be instantly and perfectly modified to suit the requirements of each individual case.

By a number of simple appliances it is possible to localize the electric-light bath at will. For applying heat to circumscribed areas of the surface the electric light is superior to all other sources of heat. In use it is far more convenient than the fomentation, hot bags, or any similar appliance. I am sure that the radiant energy of the electric light penetrates the tissues to a depth of several inches. This I proved by actual observation, as before intimated. For deep-seated pain, as well as for the relief of hyperesthesias of the skin, I know of no remedy more valuable. Many applications of this sort have been made by myself and my colleagues, several thousand in all, and I have constant reason to be grateful for the acquisition of this therapeutic measure, and it has afforded relief to many cases which have stubbornly resisted all other therapeutic means which I have been able to employ.

After having employed this bath in several thousand cases I feel justified in urgently inviting the attention of the profession to test its value, and I feel sure that a study of its merits will lead to its practical application in the treatment of a great variety of chronic ailments, many of which so obstinately resist ordinary therapeutic measures.

AUTO-INFECTION AND PATHOGENIC PHYSIOLOGY.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. B. NEWTON, M.D.

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The increasing knowledge of pathologic anatomy and pathogenic physiology tends to evolution in therapeutics affecting our remedial agents. We discover that they have more or less definite value; they have their rise and fall. The drug extolled today by high authority we find does not come up to the manifesto of the manufacturing chemist and may be obsolete tomorrow. When antifebrin was first introduced, a child was brought from New York City for treatment. Their physician had prescribed this drug in 2-grain doses, to be given every two hours if there should be a rise in temperature. After they had given it for a couple of days, the nurse noticed cyanosis and coldness of the extremities, with failing pulse. This fact was a valuable one to us. It is now found to have its effect as an antipyretic by depressing the heart, it has a directly paralyzing action upon the cardiac muscle. There is evidence that toxicologic effects are less common after the use of acetanilid, which does not keep the temperature down quite so long as the other antipyretics. To guard against possible accident, strychnia or quinin act favorably with acetanilid, on similar principle that we combine morphia with atropia. When the hypodermic method of using morphia was introduced, there was much precaution used to avoid the introduction of air, which might act as an embolus and cause death, and also might have a toxic effect by way of excitation of the peripheral nerves. It is now found that these dangers do not exist. We have the history of a case of supposed admission of air hypodermically with morphia which was followed by immediate death, when this method was first used. It cast much discredit upon the experiment, though the patient would have died if it had been taken by way of the stomach, as a result of the disease for which it was given. Our pathologic studies have also caused the evolution of antisepsis. The time was when an unclean skin, foul air and environment were disregarded by the surgeon. Lister began the war against microbic dirt. The mercuric bichlorid had its rise as a germicide, but its fall was only in the matter of lesser strength. It was found to act as a poison when poured into the abdominal cavity of the strength of 1 to 1000—it was reduced to 1 to 5000 and 1 to 10,000. Carbolized water was used of a strength which acted as a toxic irritant upon the tissues. The room was misty with carbolic vapor from the steam atomizer; the operation was performed in its cloud with hands dripping in the supposed germicide. Then came the announcement that the spores of the germ the vapor was aimed at could not be killed with oil of vitriol or boiling water. Then came iodoform, its villainous mephitic odor lingering in the operating room with the persistence of Mary's little lamb. It is now found that a solution of sodium chlorid answers equally as well in washing the field of operation. Lawson Tait uses water drawn from the tap, with equal success. Absolute cleanliness is where we are today in the evolution of antisepsis. It is a satisfaction to know that in the evolution of the treatment of idiopathic diseases we have found a definite cause—a germ, a toxic ferment, the product of which acts as a specific poison, "touching the life of all the blood corruptibly." If the microscope does not reveal to us all the toxicoses of a large family of ailments, it is because of the difficulties of chemic and microscopic study, but which are being overcome, and knowing the conditions of their inner development, we shall be able to prevent their destructive work.

Of the remissions of fever, its limitations, its dangers and its recurrence as an autumnal fever has always been known; but in this generation we have the probable discovery of its cause and individuality. Previously treatment could only be directed to the symptoms instead of its causation. My personal observation has been that a typic case of typhoid fever as it appeared thirty years ago is now somewhat rare. Since malarial fever became prevalent the latter has greatly modified it, being more remittent, less frequent hemorrhages, greater range of temperature, less delirium; quinin acting favorably, while formerly in the typhoid was no well-marked remedial effect, even contraindicated except as a tonic at the close of the fever.

The Brandt treatment, or the hydropathic, calls for a bath every half-hour, fifteen minutes at a time, when the temperature is 101 or upward; tells the patient to

amuse himself by rubbing his skin. This will lower the surface heat, but there is objection to this course when the patient is much reduced in strength or when hemorrhage is likely to occur. In any case the application of water of a temperature most agreeable to the patient is always best in its effect. The most satisfactory way is to sponge the exposed body at shortest intervals, wetting only the invalid while comfortably at rest in bed; we have reduction of temperature and economy of strength which will be needed at the crisis.

The Woodbridge treatment, which has attracted much attention, is fully in accord with the fact of the presence of a toxic organism in the intestinal tract. The tablets contain some of the active antitoxins—hyd. chlor. mitis, guaiacol, menthol, thymol, eucalyptol, though the most active and safe one known—the bichlorid—he has omitted. The only trouble we ever have with this latter is when given in doses so large as to offend the stomach. The 1/100 grain is a better remedial dose than the 1/15 grain, quinia being almost a specific when the fever develops the periodic type. Thirty years ago, when the soldiers came home from the South they quickly recovered from the chills, for the malarial wave had not swept over the Eastern States. When, upon its later visitation as an epidemic, we had instead of a typhoid fever whose prominent feature was a continuous high temperature with only slight remissions at the end of each week for one long month, with delirium and hemorrhage, a new type whose greatest features were extremest cold, rapidly followed by extremest heat, then a diaphoresis unknown in other fevers. The popular theory is that all pathologic conditions have origin in bacilli from without. May not toxic organisms result primarily from decomposition of tissues, the warmth and moisture of the body becoming a medium, causing by their presence in the blood an auto-infection from the diseased organ, thus distinguishing from germ causing diseases? There is an old saying that "no man of himself doth catch." He may have antitoxins destructive of life which he can not transmit. He can contract pneumonia, not from others, but from well-known exposure to a rapidly alternating temperature and moisture, and the morbid opportunity of the winter cold. A suspected pneumococcus is discovered in the lung tissue after it has reached the morphologic change, the gray or yellow hepatization, the primary cause being a sudden suppression of normal perspiration and peripheral nerve excitation. It rarely occurs during the summer months, when the earth, the air and the turbid waters are swarming and humming with bacterial and insect life. Only the pneumo-germ is absent. By the skin, an important excretory and absorbing organ, is eliminated inorganic salts, carbonic acid, aceton, urea, alkaline lactates, and sudorates, which produce auto-inflammations when interrupted and reabsorbed. The water of perspiration contains these salts in perfect solution as impure water. Vital statistics show plainly the increase and subsidence of fevers and diarrheas of children during the cold and hot months.

In Hartford, in 1895, there was only one fatal case of typhoid fever in February, 3 in March, none in April, 7 in November and December. In January, 1896, no fatal case; in July, August and September 12 fatal cases were reported. For 1897, in March there were no fatal cases; in September and October 10 fatal cases. Statistics illustrate the influence of the seasons in the mortality in that city of children under 5 years of age during the hot and cold months from diarrhea. In March and April, 1897, there were no deaths, but in the months of July and August 40 children died of this disease. In January, February, March and April, 1896, there were only 3 deaths, while during the months of July and August 52 deaths were reported. The greatest variations of thermometer, barometer and hygrometer are noticed in those States bordering on the Pacific and Atlantic coasts. Mark Twain once met a gentleman who told him he was making a collection of all the kinds of weather in the world, to have a museum of meteorology. Twain told him that traveling to extreme parts of the globe was useless; that if he would come East he could get all the kinds in a week.

We have 3000 miles of continent on one side and 3000 miles of ocean on the other, representing the extremes of dryness and humidity. From the far north we have its unvarying cold, from the south the hot breath of the tropics, the benign wind of the continent on the west and the sea-breeze of the Atlantic Ocean on the east. The summer months are the most gracious and lovely of the year. We are at peace with nature; even the ocean is pacific after the storms of winter. The charms and splendors of the year are now complete. That great meteorologic varieties increase the mortality, we recall the fatal influence of the blizzard of 1888, when the amount of sickness and number of deaths was enormous. Of a continuous and intensely high temperature, we recall the death-rate in New York City in 1896 during five days of phenomenal heat, from August 9 to August 14. It was estimated that 1000 persons died directly from its effect, that the deaths of as many more were caused by it among the infants and children from the intestinal antitoxins of cholera infantum. At St. Louis it proved as disastrous to life as did the great tornado, Cholera would not in the same time have caused so great destruction of life as did the sun heat. When the north wind came, invigorating with its ozone, the heated term was closed.

Am I speaking disrespectfully of the microbic family when I say that as an exterior bacterial cause they were not in it? They were surely at the demise of tissue and disposed of its remains. The question is: Were they present there as a primary cause, or was death the result of retrograde metamorphosis, the decay and dissolution of the organic tissues and of the blood from active hyperemia of the brain induced by the insupportable heat of the sun's rays?

According to the experiments of Professor Bouchard, the organism in its normal, as in its pathologic state, is a receptacle and a laboratory of poisons. Among these some are formed by the organism itself, others by bacterial proteids, low forms of vegetable growth which are the guests or the normal inhabitants of the intestinal tract, or are parasites at second-hand and disease-producing. Man in this way is constantly living under the chance of being poisoned. Yet this intoxication is not realized, for the organism possesses resources which enable him to escape. The carbonic acid which the lungs exhale in twenty-four hours, if a fractional part were retained, would act as a fatal poison.

The auto-intoxication caused by the presence of bile in the blood is a familiar illustration of the toxic symptoms of bile acids affecting the cardiac ganglia, as shown by the slowing of the pulse if unattended

with inflammation. There is languor and muscular weakness; he feels that he is being weighed down by some grave mistake that his liver has made, really from fault of habit or diet. As elimination is incessantly being effected through the kidneys, experience shows us that the most intense form of jaundice does not kill, because the coloring matter, which is more poisonous than the salts, escapes by way of the kidneys. As a result of absorption grave cerebral disturbances arise from its autotoxic effects, with delirium, convulsions and coma.

It is a reasonable conclusion that because of the waywardness of our organism, the diseases of autoorigin should be studied, as well as those of a more definite germinal character coming from without, it being the fate of our structure that many of the diseases to which flesh is heir are born within us.

COLORING MATTERS AND FERMENTS.

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No other generalization which the human mind has reached has done so much to bind in organic unity the phenomena of the physical universe as the law of conservation and correlation of forces. It has helped very largely, too, to clear our thinking of many vague and unscientific notions. Among these is the notion of a vital principle or force. Science now substitutes the more definite and logical conception of organization, itself, accomplished through natural means, appropriating, co-ordinating and directing natural forces. In the light of this law, the phenomena of organic nature in their physical aspects become interpretable as incidents in the ceaseless redistributions of matter and motion, of which all organic changes consist. Vital changes are natural phenomena, and are linked in by physical bonds with the successions of nature. The forces through which life manifests itself are drawn from and returned to the common stock in nature.

The inorganic basis of organic development was laid during the variations of heat and pressure incident to the cooling and contraction of the earth. Under suitable temperature and pressure conditions, the so-called elements, as well as the higher inorganic compounds, as they exist in nature, have been formed and stored in the composition of the earth's crust and atmosphere. For ages the earth was thus engaged in fixing a large part of her own surplus energy under the form of balanced chemic attractions, transmuting the coarser irregular motion—heat—into the finer, systematized motions upon which depend the chemic properties of substances.

The properties of any substance, in the widest sense, may be defined as its stored potentiality of reacting in its own defined and characteristic way to incident forces. This potentiality inheres in the molecular constitution of the substance, and the definition is true of any aggregate of matter, be it molecule or man. Working with its own supply of force, our earth must have stopped short of organic evolution. It could never have produced the higher differentiations of form and function—the life and beauty of organic nature. A continued increment of energy is necessary with which to build organic properties or functions. This is furnished by the solar radiation. In the organic world, the light, heat and chemic energy derived from the sun under the form of vibratory motion constitute the source of power-supply for building up the almost infinite number and variety of forms. On the other hand, the combining activity of oxygen, which, in organic nature is the complement and correlative of solar force, gives to these forms while living the capacity of vital expression, and finally restores them when dead to the condition of inorganic matter.

The three general functions of life, considered in its dynamic relations, are: the fixation or storage of solar energy; its redistribution and organization in securing organic balances, and its final liberation as vital, and for the most part, motor functions. The first of these functions is accomplished in the vegetal world through the agency of chlorophyl in the green portions of plants; the second is carried on in both vegetal and animal forms, through the instrumentality of ferments, acting as the agents of the cellular elements; while the final liberation of this stored solar energy is accomplished through the agency of hemoglobin (and its derivatives—the coloring matter of bile and urine) and transmuted into the distinctive activities of animal life.

In the economy of organic nature, chlorophyl, the green coloring matter of plants, and hemoglobin, the red coloring matter of blood, perform functions that are complementary to each other. They may be considered as placed at the two extremes of a series of chemic bodies, embracing between them the various catalytic agents active in living forms. The entire group exercises peculiar dynamic functions that are of the highest importance in the transformations of force effected by living organisms.

Chlorophyl is concerned in building up from inorganic materials, organic compounds utilizing and storing the energy of the solar rays, while hemoglobin is concerned in oxidizing these compounds and liberating the stored-up force. Chlorophyl stands at the base of the nutritive processes of vegetable life and maintains a port of entry for materials and force which build up the organic world, while hemoglobin actively supports the vital manifestations of animal life and, assisted by its derivatives, the coloring matters of bile and urine, restores to inorganic nature the materials and energy which have served their ends in the animal economy. Chlorophyl, by giving, as it were, specific direction to the vibrations which constitute solar light and heat tears asunder the atoms of carbon and oxygen in carbonic acid, CO_2, and of hydrogen and oxygen in water, H_2O, freeing O, while the C and H are appropriated by the plant in the formation of carbohydrates and other oxidizable compounds, while hemoglobin supplies O, breaks up the oxidizable compounds and forms carbonic acid and water.

In order to further develop our theory and to furnish a basis for its postulates, it becomes necessary to introduce some general considerations relating to the properties or functions of matter, and especially those of the metal—iron. Electricity, magnetism and chemic activity are affections of matter having a common starting-point or basis in the capacity of matter for molecular polarization. They are convertible each into the other two. Electricity and magnetism might be called conjugate forces, so close and direct is their correlation. They are inseparably associated through acting in lines perpendicular to each other. To excite a molecule electrically is to excite it mag-

netically in a direction transverse to the line of electric excitation. To magnetize a molecule in a given direction is to electrize it in a transverse direction. Starting with this condition of molecular polarization, determining conditions decide what the resultant action shall be. If the proper conditions be present, the force propagates itself as electric currents. If answering chemic bonds are within reach of the excited affinities, chemic unions and rearrangements result. Should the conditions for conduction or chemic action be wanting, static electric conditions are established.

Most of the elements may be arranged into an electro-chemic series with the alkali metals—potassium, sodium, etc.—with hydrogen at the positive end, and the halogens—bromin, chlorin, etc.—with oxygen at the negative end. In the middle of the series are iron and manganese. These metals present a strong resemblance in the variety in color of their oxids and salts, their behavior toward oxygen, their magnetic properties, and the fact that they may occupy either the acid or the basic side of salts. From this last fact we infer that they are sometimes found on one side of the middle line manifesting acid or negative affinities, sometimes on the other, manifesting basic or positive affinities, their behavior depending upon special conditions in the different cases. It is by reason of their position in the electro-chemic series, possessing nearly balanced affinities in opposite directions, that the condition of bipolarity may be readily induced in them and they are hence distinctively magnetic.

The special office of magnetism in nature is to transmute other forces, to serve as a pivot or vehicle of change in their direction or modes of action. It is itself dynamic, that is, capable of producing effects, mechanical, electric or chemic, only when the body in which the magnetic condition exists or that upon which it acts is in a state of *motion*, or the magnetism itself is varying, commencing, increasing, diminishing or ceasing, in which case the molecules themselves may be inferred to be in a state of motion. A magnet is an aggregation of molecular magnets, and its action is the combined action of its molecular elements. A permanent magnet may be viewed as a static condition of force, of motion arrested and stored in the form of bipolar tensions. It embodies the capacity to take up mechanical motion and convert it into other modes of force. This capacity has been turned to immense practical account in the magneto-electric machinery so highly developed of late years. The capacity to transmute mechanical motion into electro-chemic force is possessed by each molecule of a substance in a condition of magnetic excitation. The aggregation of molecules into magnets simply aggregates or combines their action. With these facts and deductions from accepted facts before us we are now in position to further develop our theory or view of the action of these immensely important physiologic agents.

The coloring matters, chlorophyl and hemoglobin, contain the magnetic metal, iron, and upon this primary property of iron depend their peculiar dynamic functions. True, there is a striking contrast in the manner in which the property comes into play in the two cases, being made the basis of a function in each which undoes what the other does. This contrast will appear as we proceed. The action of chlorophyl is a dynamolytic process comparable to electrolysis; in fact, virtually the same. The iron of chlorophyl is magnetized and set in motion by the energy of the solar rays. Thus are developed what are essentially rotating magnets. The condition of magnetization and correlated electro-chemic excitement with rotary motion in the atoms or particles of iron is a transitional condition of the force, which, received on the one hand as vibratory motion, is delivered on the other as electro-chemic force. This electro-chemic force is expended in tearing apart the atoms of C and O in CO_2 and of H and O in H_2O, and become posited, as it were, in the atoms of O on the one hand, and of C and H on the other, to be again delivered up as heat, mechanic motion, or muscular and other forms of vital activity when these atoms again meet at the other border of the organic world. This attractive force of the atoms of H and C on the hydrocarbonaceous compounds formed for the C which has been removed and diffused in the atmosphere, is the exact equivalent of the solar energy used in parting them, and constitutes the ultimate basis of all force manisfestation in organic nature.

Plants utilizing the energy of solar light and heat, manufacture, out of materials drawn from the atmosphere and taken up from the soil by the roots, a variety of compounds—starch, fats, albumin,etc. A part of these compounds fall from the elevated plane of "proximate principles" to the condition of simple binary compounds, the measure of which retrograde metamorphosis is the amount of CO_2 exhaled by the plants. The descent from a higher to a lower plane liberates force, which, in conjunction, perhaps, with heat derived from external sources, and, acting through the agency of diastase and other so-called catalytic agents lifts another part of these compounds to the grade of organized vegetable tissue. The greater part, however, remains as reserve stores of material and force to be either used by the plant itself in the formation of parts subsequently developed, or to serve as food for animals.

Animals receive, ready prepared for them in the vegetable kingdom, the material for their nutrition and structure embodying the capacities for the force evolutions which constitute the expressions of life. True, much of this material is raised to higher planes, substances of exceeding complexity, of high molecular weight, being required to meet the demands of the extreme differentiation of form and function in the higher orders of animal life. In this lifting of pabulum for the formation and maintenance of organic structure, force is consumed, contributed no doubt by the retrograde metamorphosis of other constituents of the food, but rendered available through the agency of so-called ferments. Some of these are, in all probability, products of the ductless glands and as yet but little known. The great and striking characteristic, however, of animal as distinguished from vegetable life, lies in the fact that its chemic processes are, in the main, reductions of matter with evolutions of force which find expression as heat, sensori-motor activity, etc. At the top of the scale of organic nature, we find beginning processes the exact reverse and complements of those we found initiated by solar energy through the agency of chlorophyl in the green leaves of plants. These processes end in the complete restoration to inorganic nature of the matter and forces which have performed their parts in the mystic play of that inscrutable something we call life.

The red corpuscles of the blood, by virtue of the iron which exists in them as a constituent of their

hemoglobin, take up oxygen from the air in the lungs and deliver it up in the capillary circulation, returning with their hemoglobin in the reduced condition. In making the circuit from the lungs, through the capillaries and back to the lungs, the hemoglobin changes from the bright red of highest oxygenation to the violet of lowest reduction, passing, no doubt, through the whole gamut of colors. When it leaves the lungs it occupies the red or dynamic end; when it returns to the lungs, the violet or chemic end of the chromatic scale, its color at each stage of the declension being the index to its dynamic capacity. At the point of lowest reduction its dynamic capacity is a minimum, its chemic affinity for oxygen after it reaches the lungs, a maximum. At the point of highest oxygenation, its chemic affinity is satisfied, its dynamic capacity a maximum. In the capillary circulation this chemico-dynamic force —of which hemoglobin in its transit from the lungs is the vehicle—is reconverted into heat and motion by the impact, as it were, of atoms which had been torn apart by the dynamolytic action of chlorophyl in the green leaves of plants.

Chlorophyl and hemoglobin, with the other catalytic agents between them, require for their physiologic activity certain necessary conditions. One of these is always heat or other available force in the ascending, constructive, lifting, force-consuming series on the one hand, another the presence of oxygen with its capacity of unlocking force in the descending, destructive, force-releasing series on the other. Solar energy, either as the direct rays of the sun or as diffused daylight, is necessary, furnishing as it does the working force for the activity of chlorophyl. This activity, with the processes which depend upon it, ceases in the dark.

The permanent withdrawal of light starves green-leaved plants to death. True, it has been shown that plants will flourish in the electric light with the exclusion of the sun's rays, but the electric light furnishes energy under the form of vibratory motion practically identical in character with solar light. Diastase, which initiates and helps to carry forward the process of germination in seeds, is inert until supplied with the proper degree of heat. The same thing can with safety be affirmed of other agents related to diastase and concerned like it in constructive metabolism.

The nature and mode of operation of the various substances which serve to transmute heat into constructive energy under the directive agency of animal and vegetable organisms appear to me to furnish a rich field for practical investigation. The alkalinity of the blood and tissues furnishes an all-important condition for hemoglobin in the animal economy. The alkalinity of the blood differs in degree at the two extremities of the circuit. In the lungs it reaches its highest degree from the exhalation of carbonic acid. In the capillary circulation it becomes less alkaline from its absorption of the products of oxidation. In passing from the lungs to the capillaries the iron of hemoglobin crosses its equator between acid and basic affinities. In returning to the lungs it recrosses to its region of positive attractions. In the lungs it is electro-positive, and unites with oxygen, which is electro-negative. In the capillaries of the various organs and tissues of the body it becomes electro-negative, repelling its oxygen. The oxygen itself is doubtless converted into its allotropic form, ozone; that is, the atoms of O_2, the ordinary condition of oxygen, are dissociated and polarized in the same direction. In this condition they can not unite with each other, but possess in the highest degree the affinities of oxygen.

In discussing the action of chlorophyl we figured the iron as in a condition of balanced bipolar tension, performing the part of rotating magnets, appropriating the solar radiation and converting it into electro-chemic force, thereby tearing apart the atoms of O and C in CO_2 and of H and O in H_2O and positing the energy of O, on the one hand, and of C and H on the other, under the form of chemic affinity. In the case of hemoglobin, we view the iron as oscillating between acid and basic affinities, being in the one case, in the condition of electro-positive accentuation, uniting in the lungs with the electro-negative oxygen; while in the other case, through a change of chemic environment, it swings into the opposite direction of electro-negative accentuation, throwing off the electro-negative oxygen, the resulting oxidation reconverting the chemic affinity into heat and other forms of energy. It would seem, however, that the alkalinity of the blood, with its changes in degree at the extremes of the circuit, does not absolutely endow hemoglobin with its polarity or cause of itself alone the reversals of affinities. Blood outside the body will for a time manifest this property, as shown by its changes in color from red to purple, or from purple to red, according as the oxygen is excluded or supplied. Hemoglobin, if extracted unchanged from fresh blood, will behave in the same peculiar way toward oxygen. Even the hematin in blood-stains possesses a remnant of this property. An examination into the *rationale* of the guaiacum test for blood discloses this fact. Peroxid of hydrogen does not by itself oxidize a solution of guaiacum, producing the characteristic blue reaction, because its loosely-held oxygen is liberated in the condition of antozone, and only agents liberating oxygen in the opposite or ozonic condition can produce the reaction. If hematin be present, however, the reaction occurs, the antozone undergoing a conversion into ozone. This seems to indicate that the iron, retaining something of its physiologic setting in the hematin molecule, retains also something of its physiologic power.

The alkalinity of the blood, however, with its changes in degree at the extremes of the circuit is necessary to the performance of the physiologic function of the red corpuscles by determining the time and place at which the reversals of the oxygen affinities of hemoglobin occur. In the lungs, where alone oxygen is obtainable, the highest oxygen affinity of hemoglobin is thereby developed. In the capillaries of the various organs and tissues of the body, where oxygen is needed to meet the demands of the ceaseless change, the highest repulsive force of hemoglobin for oxygen is thus brought into action. When the blood-cells die, their hemoglobin undergoes a conversion into a substance which has been called "hematoidin," the more complex molecule of the former breaking up and the atoms of C, H, N and O rearranging themselves into the simpler molecules of the latter. This substance is believed to be identical with bilirubin, the yellow-red coloring matter of bile. The transformation of hemoglobin into bilirubin appears to be a spontaneous change, taking place under the conditions furnished in the blood of the living animal when the blood-cells die.

Bilirubin has been found in old extravasations of

blood, evidently produced upon the spot by transformation of hemoglobin. If red-blood cells be broken up and made to assume a liquid form by alternate freezing and thawing, and the solution be injected into the veins of an animal, the operation is followed by a discharge of bilirubin in the urine. Under ordinary conditions, the liver extracts the coloring matter from the blood-cells as fast as they die, completing their disintegration. Under certain abnormal conditions the liver is unable to keep up with the work of removing the disengaged and transformed coloring matter, and jaundice supervenes. Probably most forms of hematogenous jaundice are due to unusual or rapid death of blood-cells, either from direct poisoning or depraved nutrition and consequent excessive liberation and transformation of coloring matter. Here the liver, though acting perhaps with its ordinary capacity, is incompetent to rid the system of the excess.

If the disorganization of the blood is very rapid or profound, such grave conditions as hemorrhage, ecchymoses, hematuria or hemoglobinuria develop. Various toxic agents may interfere directly with the activity of the liver-cells and lead to abnormal retention of coloring matter. Probably the jaundice which follows phosphorus poisoning is the joint result of rapid destruction of blood-cells and direct toxic action on the cells of the liver. The moderate jaundice, which usually exists in connection with cirrhosis of the liver, is due to the incapacity of that organ, from pressure on its cells and diminished blood-supply, to remove the coloring matter with sufficient rapidity, though the death-rate among the cells may be only ordinary. Here, however, the increased discharge by the kidneys compensates in a measure for this impaired function of the liver, and the jaundice is not apt to be marked. Jaundice from catarrh of the bile-ducts or other obstructive conditions has for us no special interest in this connection. The coloring matter of bile as a physiologic agent occupies a place between the red coloring matter of blood and the green coloring matter of plants, and performs functions related to that of each, taking part in the vegetative processes of nutrition on the one hand, and the oxidations of animal life on the other. It is a fact, too, worthy of note, that the chemic and spectroscopic properties of this substance indicate very interesting and significant relations to hemoglobin on the one side and chlorophyl on the other. It exists in *two conditions* —bilirubin and biliverdin, the red and the green matter of bile. The difference between them is one of hydration and oxygenation, biliverdin being derived from bilirubin by the assumption of a molecule of water and an extra atom of oxygen, thus:

$$\underset{\text{(Bilirubin.)}}{C_{16}H_{18}N_2O_3} + H_2O + O = \underset{\text{(Biliverdin.)}}{C_{16}H_{20}N_2O_5}$$

Bilirubin is formed from biliverdin by reversing the process.

$$C_{16}H_{20}N_2O_5 - (H_2O + O) = C_{16}H_{18}N_2O_3$$

Permit me at this point to state some facts which are considered settled by experimental evidence. Bile drawn directly from the bile-ducts during digestion and absorption is green, its coloring matter being in the condition of biliverdin. Bile obtained during the interval of digestion, or which has been stored in the gall-bladder, is yellowish red, its coloring matter being in the condition of bilirubin. If yellowish red bile be shaken up with air or exposed to the action of an oxidizing agent, as nitric acid or iodin, the color changes to green; then, if oxygen be excluded by placing it in a bottle and corking tightly, the color changes to yellowish red again. This fact suggests an analogy to oxyhemoglobin and reduced hemoglobin.

Glucose, $C_6H_{12}O_6$, the product of the digestion of starch and saccharine substances, is deposited in the liver as glycogen or liver starch, $C_6H_{10}O_5$, undergoing a dehydration. After digestion and absorption have been completed, this material is given off as required by the needs of the system, undergoing a rehydration into glucose. There is reason to believe that albuminose—the product of the digestion of the albuminous elements of the food—undergoes a reduction in the liver to blood albumin, losing an atom of oxygen. We have already found reason to conclude that the conversion of hemoglobin into bilirubin is the normal transformation which follows upon the decay of the blood-cells under the conditions furnished in the circulating blood.

With these facts before us we venture to suggest further that, while digestion and absorption are in progress, the liver-cells, by a selective action upon the coloring matter of worn-out corpuscles on the one hand, and the glucose and albuminose of the portal vein upon the other, bring these substances into intimate relations with each other, effecting the interchange between them of water and oxygen, converting glucose into glycogen, albuminose into blood albumin, bilirubin into biliverdin. The green bile formed under these conditions is conveyed directly into the alimentary canal, and doubtless takes part in the hydrations and oxidations going on there. Having required these important and onerous duties of the coloring matter of bile, it might be suggested that we desist from further impositions. However, there are facts still unexplained, conditions unsatisfied, in our problem. The facility with which the bile coloring matter, chameleon-like, changes its hue, makes it a very accommodating substance. The secretion of bile continues during the intervals of digestion. A small reserve is stored in the gall-bladder, but the greater part finds its way into the intestine. Its color is now yellow-red, the conditions for forming green bile having ceased with the completion of digestion and absorption. The conditions in fact are reversed. Glucose, while undergoing deposition in the liver, required to be dehydrated into glycogen. In order to be available for the needs of the organism, it must be rehydrated and rendered again diffusible. The necessities of the case require us to lay this duty too upon the accommodating coloring matter. During the intervals of digestion yellow-red bile continues to find its way into the empty intestine, and is for the most part reabsorbed. In the portal vein the conditions are now present for the immediate conversion of bilirubin into biliverdin. We have already noted that if bilirubin in alkaline solution be shaken up with oxygen or atmospheric air, it is converted into biliverdin. Equivalent conditions are present in the radicles of the portal vein, that is, the blood is an alkaline menstruum and the hemoglobin of the red corpuscles is liberating oxygen. It is, I think, a reasonable assumption that the blood should carry some surplus of oxygen through the absorbent villi, during the intervals of digestion, since during the height of physiologic activity large quantities must be needed to meet the demand. Having the oxygen at hand, the bilirubin appropriates water from its solvent, just

as it does when shaken up in alkaline solution, with oxygen or air. In this way it is changed into biliverdin. Now, re-entering the liver, it comes in relation with the glycogen and yields up to it its water, becoming reconverted into bilirubin and reconverting glycogen into glucose. The atom of oxygen associated with the molecule of water, and liberated with it, is no doubt applied to the final oxidation of nitrogenous bodies which have served their ends in the economy. Of this reaction the urea formed in the liver is the product. The liver may be regarded as a chemico-vital laboratory in which certain elements of the food are prepared for assimilation; while others which have yielded up their capacity for meeting the demands of structure and function are prepared for elimination. The coloring matter serves the liver-cells in effecting these transformations by acting as a carrier of water and oxygen.

All honor to the men who are devoting themselves to arduous experimental work. Yet it is as much legitimate scientific progress to deduce the meaning of a fact as it is to get the fact. It is believed that the view presented in this paper is logical, consistent and true, resting upon a basis of accepted science. As an interpretation, then, of facts reached—to be sure, through the labors of others—it is hoped that it presents claims worthy of consideration.

DISCUSSION.

Dr. PEAVY—In closing this discussion I have nothing to add directly to the material contained in the paper itself. I am glad that Dr. Van Zandt has referred to the fact that hitherto no satisfactory explanation has been proposed of the mechanism by which the chlorophyl-bearing cells of plants decompose carbon dioxid and water, nor of the *rationale* of the oxygen-carrying and distributing function of the red-blood cells. These very difficulties first led to the investigations which resulted in the development of the view here presented. That the solutions offered are the true ones, my own mind no longer entertains a doubt.

In the decompositions effected by light in the green leaves of plants we have no more disturbance of unstable chemic balances, but the dissolution by a definite mechanism of the firmest chemic bonds. That the energy expended in effecting these decompositions is derived from the sun's rays, and is represented in the attraction of the divorced atoms for each other, is entirely beyond question. The process is clearly a conversion of mechanical into chemic energy. The postulate that this conversion and electro-chemic decomposition are accomplished through magnetization of the iron contained in the vegetal cells appears not only fully warranted by the premises adduced in the body of the paper, but it seems to be the only possible mechanism of the process. The facts of electrolytic decomposition and of the magneto-electric conversion of energy appear of themselves sufficient to render the conclusion necessary.

The theory that the oxygen-carrying and distributing capacity of hemoglobin is dependent upon a property of its iron, allowing it to exercise either positive or negative affinities under different conditions, appears also to satisfy the logical demands of the problem, and be fully justified by the facts of physics, chemistry and physiology. In proposing this explanation we are assuming no new property for iron. That it does manifest sometimes acid and sometimes basic proclivities is a well established fact. Its behavior in this regard is determined by its chemic environment.

Manganese, so closely related to iron in the electro-chemic position and properties, shares with it this oxygen-carrying function in the blood. The so-called catalytic action of black oxid of manganese, as illustrated in laboratory experiments, but shows the capacity of this substance under molecular agitation-heat—to take on and give off oxygen. Indeed, in certain chemic reactions manganese salts play the part of intermediary bodies, acting as carriers of oxygen, taking it from one and giving it to another of two bodies without being themselves directly affected in the reaction.

Blood outside the body, as long as it retains its vitality, will turn purple if oxygen be excluded, and then red again if oxygen be supplied. This shows that even without the special conditions furnished in the circulating blood, hemoglobin, the color of which depends upon its degree of oxygenation, tends spontaneously to take on oxygen, liberate it and renew its supply. As far as this part of our theory is concerned, the proof amounts to scarcely less than practical demonstration.

Dr. Van Zant might have added that physiologists have never hitherto furnished the bile with a function in keeping with the quantity and constancy of this secretion. Doubtless it performs some secondary part in intestinal digestion—the green bile formed during the progress of digestion and absorption taking part, it may be in the hydrations and oxidations going on in the alimentary canal at that time. Intestinal digestion, however, is fairly well performed without the presence of bile, so we conclude that it is not primarily a digestive secretion. That it is not an excrementitious product is evident from its reabsorption from the intestine during the intervals of digestion. If the bile flow of the dog be diverted from the alimentary canal and discharged externally through a fistula, it is found that, while the appetite remains good and digestion is well performed, the animal soon begins to waste and finally dies from disordered nutrition. A significant fact is that the bile flow itself rapidly diminishes in quantity and becomes very scant. From this experiment we conclude that the bile is essential in some way to the nutrition of the body, and that its partial reabsorption is necessary to furnish part of the materials for continued secretion. So we seem forced to the conclusion that bile performs its most important function in the liver itself, and that even after it reaches the intestine in the intervals of digestion, it has not yet consummated its work. Whether the task I laid for it will meet with approval of physiologists generally remains to be seen. I wish to disclaim any intention of arrogating to the coloring matter the whole function of the bile. Only such part of it as is specially fitted by nature to perform and which is in general line with the work of this class of physiologic agents do I claim for its own specific function.

METHOD OF TEACHING MATERIA MEDICA.

WITH SPECIAL REFERENCE TO DENTAL STUDENTS.

Presented to the Section on Stomatology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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This subject, like many others, has two aspects: the real and the ideal. Dentistry is in a transition period. Some years ago it was almost a mechanical art, but there have always been in the profession men who held high ideals, and through their earnestness, enthusiasm and work it is being rapidly transformed into an ideal profession. In its highest sense dentistry should be, and is, a specialism in medicine, and the work of a number of men in this country has demonstrated that the best results and greatest achievements may be derived by making it so.

There is a tendency in the civilized world toward specialization. It has been found that higher attainments can thus be reached. But on the other hand, through narrowing the field of work, we are apt to contract the mind, and thus we find that which we gain in skill compensated by a loss in broader comprehension. It becomes necessary, therefore, when training a mind for specialty work, that we have a broad foundation upon which to build. It is not sufficient that one entering the study of dentistry should have acquired a certain amount of knowledge of English, mathematics and physics, but his mind should have been trained in broader fields, so that the concentration upon this single study will not have the effect of dwarfing the intellect and narrowing the mind.

The fundamentals of medicine should have been mastered early in his dental study, and his mind have been trained in grappling with the more abstruse problems in medicine, before he is obliged to concen-

trate his entire attention upon a portion of the oral cavity. I believe this proposition to be true from the standpoint of an educator, whose business it is to build up and round off a symmetric mind and character, and I believe it is also true from the standpoint of the practitioner, who, to be successful, must be familiar with all the factors that bear more or less remotely upon the conditions which he is treating. Thus, if we could teach dentistry according to this ideal, the question, "How much materia medica shall we teach?" would be answered thus: "All that is taught in the study of medicine." However, the obstacles that present themselves are a lack of time in the curriculum and a lack of disposition on the part of the student.

In a three-year course of six or seven months each year the average dental student is overworked in mastering the fundamentals of dentistry and medicine, and in doing the amount of laboratory and infirmary work necessary to make him proficient. It has become necessary, therefore, to abridge the work in materia medica, as well as in anatomy and physiology, in order that they may have sufficient time for the dental laboratory. In our institution there are some who are better endowed by nature, and who have a higher ambition than the average student. Realizing the advantages that present themselves by attending a school where both medicine and dentistry are taught, they are taking the full course in materia medica, therapeutics, anatomy, etc., thus completing, in a large measure, the fundamental work in medicine, in the anticipation of earning a medical degree, as well as that of D.D.S., in order that they may be better equipped for their practice, and at the same time they are rounding out their education and giving their minds a broader development.

For the average student the number of remedies in materia medica must necessarily be limited. The escharotics, the antiseptics and those that are used particularly in their everyday practice must have precedence, but there are many others whose actions have a remote influence upon the mouth and its diseases, which must also be taught. All of those affecting nutrition and assimilation have a direct interest to the dentist, and the art of prescribing should not be neglected, as it sometimes is. Having selected the few remedies we wish to teach, what to teach about them should be our next concern. All that we know is hardly too much. Their pharmacology is essential, their constituents and chemistry should be taught, and their physiologic action in its broadest sense should not be neglected, and then their therapeutic value in dentistry, as well as in medicine, should be the cap-sheaf of our investigation.

The question of how we shall teach it is a much more difficult one. Teachers are born, not made, and each teacher must adopt a method adapted to himself. In my work I have found the pharmacology of a drug can best be taught by object-lesson. The laboratory may be provided or improvised; it is only necessary that the student shall have an actual living acquaintance with the drug. The physiologic and therapeutic action can best be taught by didactic lectures, wherein the student may partake of the enthusiasm of his teacher, and may be made to feel, through that enthusiasm, the effects on long and personal experience with the remedy, which will inspire him with confidence—a mighty adjuvant in the application of drugs. There is much, however, that should be eliminated from our lectures. The names, preparations, composition, chemic reaction, doses, etc., should be supplied in advance, that the student may commit them to memory, and have regular recitations and drill on them. This work should precede, or go hand in hand with, the laboratory work. I have never found a text-book which taught just what I wished to teach of any particular drug, nor one which treated only of those drugs which I esteemed of greatest importance to the student. I, therefore, have adopted a system of preparing skeleton notes which embrace those things that the student must commit to memory, furnishing mimeograph copies to each of the students, and leave for my didactic lectures that which I feel I could enliven by my personality. I have followed this course for three years, and the increased proficiency of the classes since its adoption has demonstrated to me the efficacy of the plan.

Having familiarized himself with the pharmacology of a drug, the student now comes to the most interesting part of his study. He has been grounded in his physiology, his chemistry, and his pathology, and now he is enabled to see the practical applicability of this knowledge in the application of the remedies to diseases. After due consideration, I have omitted to place upon my skeleton notes anything of the physiologic action or therapeutics of a drug, because they are not to be memorized, but to be reasoned out. Just how a drug acts primarily upon one organ, and through some of the great systems of the body results in a secondary action upon another organ, and drawing the parallelisms between the action of remedies and the pathologic conditions in diseases is as fascinating a study to the student in medicine or dentistry as is the illustrating of a natural law in physics. This is the logic of medicine.

In teaching therapeutics it is not sufficient to tell what diseases may be cured, and which harmed by the administration of a given drug. It makes a fascinating study for a student to take a disease, hunt out its etiology, trace the pathologic changes that take place, for the purpose of selecting a remedy that will overcome the conditions known to be present, eradicate the etiologic factor, or to build up certain structures in order to offset the destructive processes of the disease.

In my work this is still further supplemented by a course of applied therapeutics, in which we have the patient before us. We now can no longer follow the classic lines laid down in books, but must take diseases as find them, modified by the various agencies that environ the human animal. The pathologic conditions must here be studied out and remedies found that will logically supply the indications. If, perchance, in this course the student has witnessed diseases treated which are of little interest to him as far as he is concerned in his practice, he may have been given a lesson in mind culture that will serve him in good stead. The power of reasoning from effect to cause, and back to effect, is the best mental discipline for cultivating practical minds.

Potion for Whooping-Cough (L. Concetti).—Resorcin 2 gm.; antipyrin 1 gm.; aq. dest. 70 gm.; syrup of codein 10 gm.; syrup of cedar 20 gm.; tincture of opium 3 drops; tincture of belladonna 8 drops. A teaspoonful every hour or second hour to infants; a dessert-spoonful for children from one to three; and a tablespoonful for children over three.—*Semaine Méd.*, November 30.

NOISE AS A FACTOR IN THE CAUSATION OF DISEASE.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ROBERT W. HASTINGS, A.M., M.D.

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Modern life has many peculiarities, and in his consideration of the influences which tend to the health or disease of the people, the physician must study carefully these features which may or may not introduce new factors. Among them, none is more frequently quoted than the tendency to group in large cities. So well accepted is this tendency that we need not give any figures to support the statement.

Many grave hygienic problems have resulted from this congestion of human life. Their solution has called for the most exact scientific research, careful formulation of sanitary laws and rigid enforcement of them. As a result, the dreadful scourges and epidemics which so often decimate the cities of the old world, do not obtain a foothold among us. Yet, disease is by no means abolished, though the average life may be a little lengthened. All too frequently life is cut short from preventable causes, and almost invariably one or more senses or faculties are impaired early in life. I ask your attention to one of the more obscure factors in the causation of disease which remains and in some lines is on the increase. Of scientific research in regard to it there has been very little. The reasons for this will be obvious. Still less attention has been paid to legal restrictions because of it.

What is noise? It is difficult to sharply separate "noise" from "sound." Ganot says: "Sound is the peculiar sensation excited in the organ of hearing by the vibratory motion of bodies, when the motion is transmitted to the ear through the elastic medium." "Sound, properly so called, or musical sound, is that which produces a continuous sensation, and the musical value of which can be estimated, while noise is either a sound of too short duration, like the report of a cannon, or else it is a confused mixture of many discordant sounds like the rolling of thunder or the noise of the waves." Whoever has lived beside streets can give better illustrations than these; for instance, the passing of a heavy team loaded with street-railway iron, or of a series of teams loaded with stone or coal. To such an one the "rolling of thunder" or the "noise of the waves" is like music. Now I do not suppose any one will deny that city life has in it far more kinds of noise than country life—not more sounds but more noises. And these noises are intensified and repeated by the high walls against which they strike and from which they rebound again and again. Nor are the street noises by any means all of the story. It is an unusual thing to be able to converse easily in any large factory. The persistent clatter, clatter of the machinery drowns the human voice almost completely. It is not the sound of the shoemaker, spinner, weaver or blacksmith in his or her country shop, but the confusion of a score or hundred similar sounds joined to a multitude of others made necessary by the machines and shafting.

Our consideration of what has been and is the effect of this noise incident to the great change in manner of life, naturally divides into three portions: 1, the effect of noise on the ear itself; 2, the effect on previously known or existing diseases; 3, its power to originate disease or in any way affect the health of the general community.

With reference to the first, some careful observations have been made, for there is one class of men who work in the midst of such din that the attention of aurists has been drawn to them. These are the boiler-makers. The constant reverberation of sounds produced by hammering large pieces of iron in a short time produces boiler-makers' deafness. St. John Roosa says, "boiler-makers are nearly all hard of hearing." "Those who work on the inside of boilers as riveters and who have shorter waves of sound striking upon their ears, lose their hearing most completely." Just what the lesion is, is not wholly decided. The author above cited thinks it is a hyperemia of the ultimate nerve fibers of the cochlea, and declares that "an acoustic neuritis may be produced by noise just as well as an optic neuritis by exposure to a glare." Dr. E. E. Holt records observations of deafness in boiler-makers, ship-caulkers, etc,, but thinks the lesion is a middle-ear catarrh.

Dr. Roosa's theory seems to us more reasonable, however. Indeed, he has found that people with chronic middle-ear trouble hear better in the boiler factory, and ascribes this to the unusual excitation of the nerve. Doubtless many of you could give testimony of cases where deafness has arisen in persons exposed to constant loud noise. Boiler-makers and ship-caulkers are by no means the only ones who work in the midst of a din. The observations above noted are good as far as they go, but there is room for far more study in this line. This investigation, in order to be of value, must be carried on by experts who shall be able to separate results produced by noise from those due to other causes.

If we turn to the second division of our subject we find even less scientific research, but a general unanimity of professional opinion. When once it becomes evident that a patient is to be seriously ill, almost the first requisite is a quiet room. Thus Billroth advises for feverish and nervous patients a room where such noises as hammering, rattling of carriages, etc., can not be heard. Wise directs the selection of a sick-room on the second story, or higher in cities, and where it may be as quiet as possible. Many other authors might be quoted, but we all believe in it. When a patient—old, young or middle-aged—is *sick*, we want him in a quiet place. Now, why? What effect does noise have? Perhaps the chief result of noise is to prevent sleep, and sleep is an absolute necessity to bodily or mental recuperation. Indeed, Menander has said that all diseases are curable by sleep. We do not believe that, but we do realize its great value as a remedial agent. During sleep the brain becomes anemic, and the vessels of the skin dilate. Experiment has shown, too, that every sudden noise causes an increase of the volume of the brain, even though the sleeper is not awakened. Each such change produces a corresponding effect upon the nerve-centers and checks or prevents the processes of plastic nutrition. Thus, though the patient may become accustomed to the noise, the evil effect will be present to a greater or less extent. Quiet is desirable and may be necessary, not only as a means to secure sleep but to allow rest. When the blood-vessels are being continually contracted and relaxed according as the reflex centers are excited by noises or not, the disturbance in the supply of food to the diseased part is of grave importance. A

vicious circle is soon easily established, and the noise which at first seemed such a little factor becomes a very large one.

Suppose the patient *does* get a fair allowance of quiet sleep, if the other part of the day is disturbed by various noises, the course of the disease is thereby aggravated. The prevention of the ringing of neighboring church bells or of loud traffic along the street when a great statesman is ill, are familiar illustrations of the popular recognition of the desirability of quiet for sick people; it is just as desirable for any poor or obscure patient.

All this is true of any acute systemic disease. If, now, we turn to the chronic diseases or to those which have to do chiefly with the nerves or the great nerve-centers, we find our factor even more important. Details are unnecessary. Every physician knows the effect — sometimes fatal — of a sudden fright upon a chronic heart case, and a fright is as likely to come from a noise as from anything. Every physician knows, too, the steady failure of a nervous case, due to the constant repeating of noises about the patient. Between these two extremes we may find nearly every diseased condition of men—digestive, circulatory, nervous or local—each showing an aggravation if exposed to noise.

But does noise originate any diseases itself, and what effect, if any, does it have upon the general health of the community? We have already mentioned the diseases of the ear. Manifestly, as has already been indicated, contagious diseases can only be affected secondarily. Scientific research may yet discover, however, that sound-waves, like light-waves, do have a direct influence upon the growth of germs. It is difficult to see how any direct etiologic relation between noise and disease of the respiratory system can be traced. The same may be said of the circulatory, renal and digestive systems. Diseases of any of these portions of the body may, however, be secondary to nervous diseases. But does noise really cause any disease of the nervous system? Tyson describes nearly one hundred and fifty different forms of nervous disease, but to no one of them does he assign noise as a cause, with the possible exception of epilepsy, hysteria and neurasthenia. An epileptic convulsion or a hysteric attack may be due to a sudden fright, and this is likely to arise from an unusual noise. Neurasthenia takes its origin in the constant excitation and consequent exhaustion of the nerve-centers. Dr. F. X. Dercum has very successfully demonstrated this explanation of neurasthenia. No excitant is more frequent, none more persistent than noise. Moreover, so common is this disease in our country that it has aptly been called "Americanitis." Chapin says "as a factor in the production of insanity, neurasthenia must be considered the most important. The largest proportion of hospital admissions, received in an acute stage, have a history of neurasthenia. It is fitly called the soil out of which insanity develops." We all recognize insanity as one of the great evils threatening modern life. Do these authoritative words establish an etiologic relation between insanity and noise? But what of the relation of noise to the usual every-day life, usually esteemed healthy. Who shall say how far the high-strung, nervous, active temperament of the American people is due to the noise with which they choose to surround their daily lives? Surely, it is a factor which can not be entirely disregarded. Only physicians know how important this temperament is in the inception, course and convalescence of disease.

Finally, we may properly consider the children. They are notoriously the cause of noise. What effect does noise have upon them? Holt says functional nervous diseases are steadily increasing among young children, and ascribes this increase to playing with them, "stimulating to laughter and exciting them by sights, sounds or merriments until they shriek with apparent delight." He advises that all such romping and playing during the first year at least be absolutely prohibited. During the first three years sleep is not very deep and hence demands attention to quiet surroundings.

We have then found noise a factor in the causation of certain ear diseases, in the course of many acute and general systemic diseases, in the etiology of some nervous diseases, chiefly neurasthenia and to some extent in the general health of the community. What line of action is open to us as students of preventive medicine? First, careful study is demanded of specialists, general practitioners and inventors to devise some protection for the ears of those who must work in the midst of a continuous din. Cotton has been used, but is inefficient. It is no slight matter to have such a large number of people continually added to our population, nearly or wholly deprived of their hearing. Many of them must become, sooner or later, a charge upon the public, and all of them are to a great degree rendered incapable of work. Protection to the eyes is guaranteed by law. Why not for the ears? Moreover, it seems probable that a careful examination of manufactories will show that much of the noise is unnecessary. If it were realized that the noise is really harmful, quiet would be secured by the same methods that we have good air and suitable light. It will cost some money, but when the people demand quiet the capitalist must furnish it. As usual the physician must lead the way.

If, now, we turn to noises outside of factories, there is also much to be accomplished. Pavements may be made smoother, as they are in Washington, D. C.; carriages may run more quietly, as for example by the addition of rubber tires; street cars and steam cars can run more quietly by care in the construction of roadbed and cars, and in the running of the cars; heavy teams may be so constructed and loaded as to avoid the dreadful jar, clatter and crash so often heard on our streets; hurdy-gurdies, handorgans, street-venders and newsboys may be restricted in time, place and calls; shrieking whistles and jangling bells may be abolished. These are but examples. Many other possible regulations will occur to you. It will require time and work and money. As physicians we must believe that quiet is a great essential to good health and then we must persuade the people that our belief is well founded.

Kilsyth Road.

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A STRIKING ANALOGY BETWEEN THE PHYSIOLOGY OF ANIMALS AND THAT OF PLANTS.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY EDWARD DAVIES McDANIEL, A.M., M.D., LL.D.
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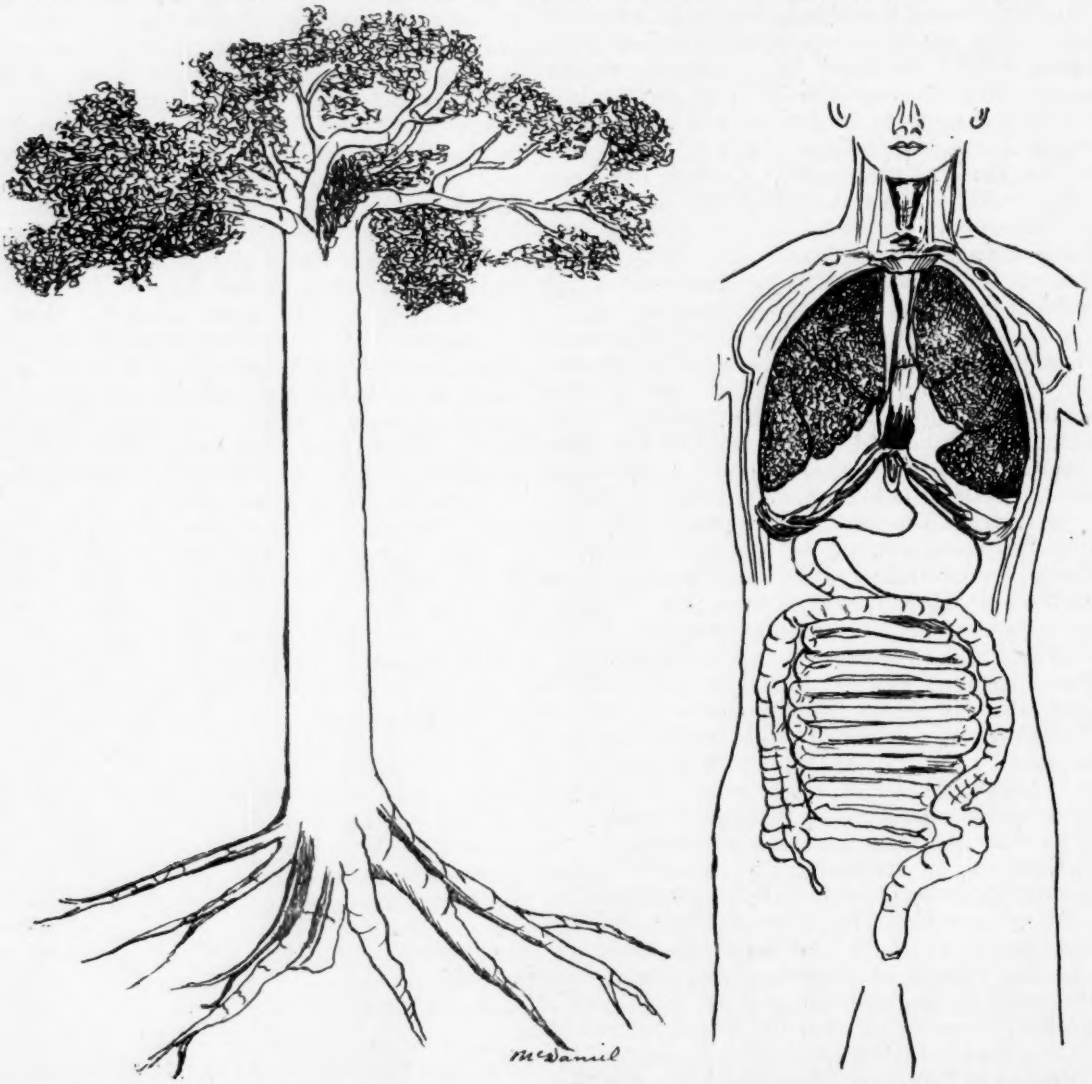
There is a unity of plan in the anatomy and physiology of plants and animals that affords one of the most striking, most forcible and most beautiful of the evidences of the unity of nature. This unity of plan, in addition to its great but overlooked importance in comparative anatomy and physiology, is also of so great consequence and utility in human physiology and dietetics as to demand from physicians constant consideration and utilization. It is so plain and easy to be understood, that it may be rapidly and satisfactorily traced, in the following illustration from plant to man, by going from left to right, or from man to plant, by going from right to left. All that is needed here is to start at the man, as every hearer will desire the pleasure of returning by himself back to the plant.



The tree, as is seen, ends above in large limbs, branching again and again into smaller and smaller portions, and finally terminating in leaves that spread out into the air—one of the two great sources from which the tree derives its pabulum, and into which it discharges excrementitious matters. Below, the tree divides into large roots, which divide and subdivide into smaller portions until, in almost capillary attenuation, they permeate the soil—the other great source of food-supply and of waste discharge.

If we strip away the leaves, leaf-stems and small branches, we will have left, above the trunk, only the large limbs, which we can conceive to be hollow like the fingers of a glove, and if we invert these into the upper end of the trunk, conceived also to be hollow, and then imagine the leaves, stems and small branches to be all restored to their former places, the new arrangement will represent the air-tubes and lungs, through and into which the air enters the chest to furnish food to and remove excrementitious matters from the like parts as before.

If we conceive the like change of arrangement applied to the roots and rootlets of the tree, we will have the absorbent and secernent surface of the roots and rootlets in apposition, with an internal field of supply and discharge—of endosmose and exosmose—i. e., a soil. However, this soil is unbounded, stationary and permanent, but is of limited supply and must be regularly renewed. There must be a receptacle with proper devices for income and outgo. Such devices are furnished in locomotor organs for reaching a food-supply, in prehensile organs for its appropriation, in

an alimentary canal for its receptacle, and in a proper outlet for residual and excrementitious substances.

The relationship between the foods and excrementitious matters of plants and of animals may be studied in connection with the illustration, and also the importance of remembering in dietetics and therapeutics, the great importance of the proper management of the contents of the alimentary canal to man's health and life.

DEVELOPMENT OF THE VITAL FORCE.

A PHYSIOLOGIC CONSIDERATION OF SOME OF THE FEATURES.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7–10, 1898.

BY AUGUSTUS P. CLARKE, A.M., M.D.
CAMBRIDGE, MASS.

It is important to bear in mind the dictum of the great German pathologist, Professor Virchow: *omnis cellula e cellula.* All our experiences, whether they have been directed in the search for facts among the elements of the vegetable or among those of the animal kindom, tend to establish this apothegm as a truism.

The questions are often asked: Whence came the first cellule? Was it a development from an atom? What was its previous physical constitution? In reply, it seems but proper to say that the introduction of such inquiries is merely the result of premature consideration. In the discussion of the subject before us we will not say, however, that the examination of some facts touching upon the questions raised is not one of the objects that can come properly within our purview. Reference to the subject of the divisibility of matter may serve to awaken in us some thoughts on the question.

It is generally admitted that there is no definite limit to the properties of bodies by which their parts are capable of separation. However small a particle of matter may be, it is impossible to conceive that it can not again be divided. There may be, nevertheless, a speculative line of demarkation beyond which bodies can not be divided by the ordinary means that are within our present control. This inability on the part of mankind to accomplish more, does not affect the principle by which the disintegration of substances about us is continuously carried on. A grain of musk will sometimes diffuse its particles so as to scent a room for years, without losing any of its apparent weight. A dog will often detect his master's footsteps or the way of traveling through crowded streets or frequented roads by the mere scent, or the sensible appreciation of particles that have been exhaled from the owner's clothing or from his person. This is another proof of the exceeding attrition which matters may undergo and still have physical properties capable of being recognized.

In speaking of the cellule it is reasonable to infer that there have been variations as to its extension and form from the earlier parent cell. The nerve or ganglion cells of man and the vertebrates differ greatly in form, and vary in size from 10 to 100 microns. The cells of the motor areas are for the most part the larger. The earth during the earlier periods underwent many great revolutions. The atmosphere was constituted largely of nitrogen, and this condition of the air must have continued until some forms of vegetation had taken on permanent activity, by the gradual evolvement of oxygen from the elements that were subject to disintegration and change. The anaërobic cellules which subsist through the medium of the fermentation they produce, assumed from the increasing contact with the oxygen the nature of aërobic organisms. The changes through which such cellular bodies passed could not have been other than of a slow type. The earth, in some form and extension, must be of great antiquity, if not of beginninglessness.[1]

Though there are many indications that the earth has undergone vast and mighty change, there is no real proof that the whole mass at any one time was in a molten state. Assuming that such was the case the atmosphere surrounding it may not have been so affected as not to have been a center for fostering some of the various forms of cellules. The interior of the earth is almost entirely unknown; the depth which we have been able to penetrate is scarcely to be reckoned when the whole diameter is taken into consideration. The theory deduced on account of the gradual increase of the temperature as we descend, that the earth is still in a molten state, and that we are living upon a mere crust, as it were, is based upon a most unstable foundation. Paley was once confronted with the question as to the eternity of matter. He disposed of the subject by saying that all the various parts of the universe presented indications of being the work of design, and if of design, thei must have been effected by a designer. Paley compared the structure and composition of various bodies to those of a watch which might be found on a roadside. Each part of the timepiece being so constructed as to depend upon the proper working of the other parts, would impress any one who might be wholly unacquinted with the character and uses of such a device, that it was the result of design and of a designer. Paley, it must be admitted, was a pleasing and gifted writer, but he was quite unacquainted with the more modern methods of investigation and results of the inquiry of the inconstancy and transmutation of the species.

As before remarked, there must have been a gradual evolution of the aërobic from the anaërobic cellule. After the oxygen became more freely disengaged from the deeper centers, the formation of the nervous cerebro-spinal axis took place, and its development continued until it reached the stages of the various types under which it is now represented. By slow degrees the environment of the cellule improved; it was then able to appropriate to its growth a more choice pabulum, and this was transmitted to the central parts, where the structures became more highly vitalized. The effete matter was then extruded toward the surface. In this way substances of the cell, says a writer, assumed a greater activity until there appeared ele-

[1] The authority for the creation of the heavens and of the earth rests entirely upon interpretations of the "sacred writ." The term *bara*, occurring in Genesis and translated "created," is used in Isaiah, where Jerusalem is spoken of as "created a rejoicing, that is, caused her to rejoice." The word means primarily "to cut" or "to carve" of materials that existed before the cutting or carving took place. In another passage the word *bara* is used in speaking of begetting a son. We all have our ideas how cities have been built and have been made sources of pride and rejoicing to their inhabitants, and how sons or children have been begotten or produced. The various agencies employed by mankind in accomplishing any great object or event are frequently represented as being the attributes or instruments belonging to a higher power. So also the results of the action of inanimate agencies, as heat, light, and electricity, have often been described as the workings of a supreme being. These considerations, though born of our religious consciousness or deduced from metaphysical inquiries where the ultimate basis of our being is to be differentiated from its phenomenal aspects, should occupy, nevertheless, no important place in a scientific investigation.

ments from which contractile tissue and muscular sense were developed.

That principle or grade of intelligence, which in animals we denominate as "instinct,"[2] must have been the gradual result of chance acts put forth, either for the purpose of preservation from danger or for greater comfort and growth in their living. When we come to analyze carefully our own actions and to compare them with those of the lower forms of animal life, we shall find that they are largely the result of association and of learning by experience. These perceptions in animals are not the glimmerings of lapsed intelligence, for that view would imply that the ancestors were superior in knowledge to their descendants. All observation and experience show that there has been a gradual progress in brain power in animals even in the forms we call protozoa.

Human beings, it has been claimed, are superior to animals on account of the power of reason; that is, that mankind possesses the power of ratiocinative processes or of presenting syllogistic arguments, of generalizing and of drawing conclusions. As we study more thoroughly this phase of the human mind we shall be forced to conclude that this attitude or attainment is not of so great importance as has often been represented. Most people can reason correctly and can arrive at proper conclusions provided the premises they choose are true. In order to have true premises man must not overlook the results of his experience. An animal does the same. Every animal must be regarded as something more than a recorder and transmitter of impressions. His impulses are the results of his sensations. The same is true of man, though in a higher degree, on account of his cerebral or encephalic centers having reached a larger and more powerful development, from a more prolonged and active exercise of those parts. A good example of an animal's power of reasoning is seen in the study of the beaver, whose skill in constructing his house and in damming a stream is remarkable. The animals when preparing their lodges on the banks of a river or lake are occasionally overtaken by floods, and so some of them lose their lives. If they were to build their huts far enough away to be safe from the destructive action of the higher rise of floods, their escape from the huntsmen, who are their greatest enemies, would not be so easy.

The further we carry on our researches regarding the nature and value of ratiocinative processes, the less will we consider such operations as the greatest of all attainments. What remarkable discoveries in art or science have been made by relying essentially upon the methods of inductive philosophy? Most of the great achievements have been made by the persons who have been well versed in the details of similar methods of procedure or in the mechanism of works that afford light respecting the new invention. Harvey, in reply to the question as to what first gave him the idea of the circulation of the blood, said that the valves of the veins pointed away from the central organ, the heart, and that this fact led him to believe that they must have been concerned in the movement of the blood in the heart and arteries. This celebrated physician and surgeon, it must be remembered, had, before he made his discovery, been an accomplished anatomist. He had made himself master upon the subject of the views of Servetus, of Columbus, Cæsalpin and of other great investigators, who, appears, were on the verge of interpreting the pri ciple by which the motion of the blood was co trolled.

The knowledge of all principles underlying scien generally has slowly been evolved. The same is tr in regard to the conception of a plan for the efficie working of the steam engine and of gaining a kno edge of the most available materials for its constru tion. It has taken ages for man to learn how describe correctly the several parts or bones of t skeleton, or the different portions of a plant a flower, as their several characteristics are now studi and set forth. The nervous cerebro-spinal axis man, like that of any animal, was constituted origi ally of a mere entanglement of developing primiti cellules.

Man's adaptation to his environment was undou edly accidental, though it proved favorable to growth, progress, and attainment. He is often too to boast of his superiority over some of his app ently weaker neighbors, just as one nation rega its own material possessions and its opportunities of far greater consequence than those within reach of other nations. Referring again to the po of reason as measured by the scale of what are cal logical conclusions, how very fallacious this attrib will often prove when implicit trust is had in deductions that are reached through its operation.

The consultant says that general anasarca, or drop in the human body is dependent upon one of th causes of disease, viz., upon disease of the heart, the liver, or of the kidneys. Examination sho that the heart was not primarily affected; the li was also regarded as not abnormally involved. T great edema must therefore be, in accordance w the general proposition enunciated, due to origi disease of the kidneys. The autopsy showed, h ever, that the cause of death was owing to press upon the ureters of morbid growths (uterine fibroi which had been the *fons et origo* of all the untow symptoms. Had a little more attention been paid the advisers to the formation and effects of pel neoplasms and to the results of inflammatory con tions, and less trust been placed in the conclusi drawn by reasoning without the help of knowle and experience derived from such special study, patient's suffering might have been relieved and life prolonged by the adoption of proper, timely s gical methods of treatment.

Facts are often wrongly interpreted by regardi certain phenomena as the result of laws of the ani economy. If by law we mean that certain spec phenomena occur after the appearance of partic conditions, there can be no objection to using term "laws" for phenomena. When we assert t such phenomena are the results of a law establis by a lawgiver whose dictum is irrevocable, we dece ourselves and thus give color to the conclusion t all remedial measures for relief are useless.

By the term "law" we can mean no more than t certain results follow when certain conditions presented in accordance with special observed f which have previously been ascertained. We kn that when chlorin and sodium in limited quantit and under the influence of a particular temperat are brought together the formation of common s will be the result. Should the condition of

[2] See Prof. H. W. Parker's interesting article on "The Mystery of Animal Minds," in the February number of Popular Science News, 1898; also in a previous number of the same journal.

mosphere undergo a material permanent change, ch a product as salt by the union of the two ele-ents might not be the result. Assuming that such physical atmospheric change should supervene, we n not otherwise conceive than that the principle sential to the formation of chlorid of sodium must ve been beginningless. The departure from the currence of such results can only take place during e presence of other conditions. Should our entire anets, as it is possible for the human mind to appre-nd, be so heated or melted as to destroy apparently l animal and vegetable life, as has seemingly pre-iled within its structure during the several geologic riods which may have existed, it would be alto-ther likely that life of such nature and character uld again recur after the subsidence of the heat or the caloric that would be engendered by the fusion matters, though it would undoubtedly require the se of centuries for its reduction. The ebb and w of tides which would take place would be on a le that would be almost incomprehensible. The normous columns of clouds that would be formed om the ebullition of all the watery elements, though structive to the larger living organisms, would vertheless waft volumes of cellules far beyond the rder lines of the consuming heat evolved. Living llules would thus be preserved and their multiplica-on in some form would be continued. The diame-r of such cellules might gradually undergo, during e subsequent processes of their formation, material minution. The aërobic organisms would assume, before stated, more and more the nature of anaë-bic bodies, or of other minute forms of life, depend-nt on the pabulum which could be appropriated from e circumfusa in which they would be enveloped.

In this connection it might not be improper to state gain that carefully recorded experience and close servation tend to show that all forms of animal life, cept those in which morbid changes have occurred, ave materially advanced to a higher state of develop-ent. Even those we denominate as the protozoa ave progressed and undergone division into branches f a higher grade. How impossible would be the complishment of the task, should any one attempt enumerate the various cycles or eons that elapse efore a simple unicellular protoplasm can become differentiated as to reach the higher grade of rganisms.

Who could say what had been the history of each ngle class of primitive cells before it assumed a ore complex structure? We may denominate such rganisms unaltered bodies or forms of life, but, as efore remarked, we can not say that such simple odies have always been in such a state, or that such nicellular organisms have not previously had at arying intervals an innumerable number of unfold-ents and regressions.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Regular Meeting, Dec. 9, 1898.

Prof. C. S. N. HALBERG officiated as chairman of the meeting.

Dr. GEORGE W. JOHNSON of Dunning, Ill., read a paper entitled

A CONTRIBUTION TO THE STUDY OF THE BLOOD OF TUBERCULAR PATIENTS.

He said that hematology was yet but imperfectly developed, and like many other methods of clinical examination, was replete with error. It seldom gave a pathognomonic diagnosis, but often gave a protosight of data that can be detected in no other way. Its limits of usefulness in the practice of medicine are yet undefined. But it has come to be of such importance of late, that scarcely any clinical examination is complete without an examination of the blood. This is especially true of the chronic infectious diseases, and more particularly of tuberculosis. Anent the blood of tubercular patients, it is stated by an eminent authority on hematology, that while the patients appear to be profoundly anemic, their erythrocytes are seldom diminished in number and the hemoglobin is usually up to par, or but slightly below it. The question is therefore asked, "What is the cause of the apparent anemia in tubercular patients?"

It is the purpose of the paper to report observations on the blood of fifty tubercular patients in the advanced stage of the disease. Every possible source of error known to the author was eliminated or reduced to a minimum. A diagnosis of tuberculosis of the lungs was positively established by microscopic examination of the sputum. That the exact extent of the disease might be known and no other pathologic process present to influence the elements of the blood, a thorough physical examination was made. Especial attention was paid to cavity formation, with the idea of determining the presence or absence of leucocytosis in such conditions. The technic was essentially that detailed in Cabot's work on the blood. Clinical notes were taken on age, sex, duration of illness, family history, presence or absence of hemoptysis or hemorrhages, afternoon temperature and somatic condition. Unfortunately, the patient's word had to be taken as to the family history. This, however, was unimportant. In the microscopic examination of the sputum, note was made of the presence or absence of strepto- or staphylococci, for it is stated by Leyden, in "Musser's Medical Diagnosis," that pus micro organisms were not found in the purulent contents of tubercular cavities. They were found in great abundance in each one of the fifty cases detailed in this paper.

Hemoglobin.—Two methods of estimating the percentage of hemoglobin were resorted to: that by Fleischl's hemometer, and Hammerschlag's specific gravity test. In these cases Gloischl's instrument was more accurate. The specific gravity test invariably registered too high a percentage. The best chemicals were used, with accurately tested Squibb's urinometer. Repeated tests were made and by different persons, with the same results. The corpuscle index was estimated from the percentage of hemoglobin as read from Fleischl's instrument. In Germany, Jellinek has been experimenting of late with an instrument called Jolle's ferrometer. This is an instrument for estimating the amount of iron in the blood. He reports eight cases of secondary anemia in which the hemoglobinometer gave readings much higher than those recorded by the ferrometer, and suggests that poorly oxidized blood may give a higher hemoglobin per cent. than the amount of iron in the blood would warrant. The hemoglobin per cent. in Dr. Johnson's cases was far below normal in every instance, notwithstanding a new instrument was used, which always reads higher than one in long use. The blood was always very dark and watery, being difficult to save till taken.

Chlorosis.—This condition was met with in eight cases. Notwithstanding that it is seldom met with in males, five of these eight cases were in male patients. It is a fact that no hard and well-defined line can be drawn between mild cases of secondary anemia and chlorosis, but from the classic symptoms laid down for chlorosis, these cases would most certainly and more properly come under chlorosis. The percentage of hemoglobin was very low, even to oligochromemia; the erthrocytes but slightly diminished in number and smaller in size than normal, with now and then well-marked necrobiotic changes. There was always leucocytosis, which is not usually true of uncomplicated chlorosis.

Leucocytes—There is always a leucocytosis if cavities are present, and the vital resistance of the patient is not too low. The number of leucocytes will be in proportion to the virulence and extent of the septic process and the vital resistance of the patient. If the septic process is extensive and the patient extremely asthenic, there will be hypoleucocytosis. Cavities were demonstrated in twenty-eight of the cases. Of this number, twenty-six had marked leucocytosis, the other two were very asthenic. The white cells were greatly increased in nineteen of the twenty-two remaining cases in which cavities were not demonstrated. The remaining three were also asthenic. Leucocytosis, thereforefore, occurred in forty-five of the fifty cases. Pathologic leucocytosis is diagnostic of cavity formation, although the cavity can not be demonstrated by physical examination. The absence of leucocytosis precluded cavity formation in fairly sthenic cases.

In cases of chlorosis there is lymphocytosis. In secondary anemia the adult lymphocytes are the more numerous. Polymorphonuclear neutrophiles are abundant in septic cases. If there is an asthmatic or dysphonetic condition, the eosinophiles will be increased. Such was the observation in these cases. Ehrlich's triple stain was used in the preparation of the slides. Neusser's granules were seen in a number of cases, but were not constantly present, or could not be detected from the granular appearance of the eosinophiles. They appear as separate bodies, lying in the protoplasm immediately around the nucleus, and are most commonly seen in the mononuclear variety. They are considered to be peculiar to chronic tuberculosis and are indicative of uric acid diathesis. Among the cases was one of Addison's disease. In this case the leucocytes were all more or less granular, the granules being finer than those seen on the eosinophiles, and darker, like small grains of powder.

Erythrocytes. Well defined necrobiotic changes were noted in thirty-six of the fifty cases. Of these thirty-six cases, twenty-eight had secondary anemia. Both hemoglobin and the number of erythrocytes were diminished, with necrobiotic changes in the erythrocytes, such as irregularity in size, none being larger than normal, while some were normal and others showing poikilocytosis, oligochromemia and oligocythemia, together with a diminished number of leucocytes and an increased number of adult lymphocytes and normoblasts. The degree of such changes was, of course, varied, and there was usually leucocytosis, which is most always true of secondary anemia.

Recapitulation.—The hemoglobin was far below normal in each of these cases. Chlorosis was met with in eight patients. In these eight cases there was oligochromemia, normal or nearly normal number of erythrocytes, diminished diameter of erythrocytes, with occasional necrobiotic changes, lymphocytosis, normoblasts, and diminished number of adult lymphocytes, and low corpuscle index.

Dr. HOMER M. THOMAS—The able paper presented by Dr. Johnson is one of widespread interest, not alone to those especially interested in tubercular disease, but to the profession at large. It represents a vast amount of painstaking, thorough and scientific work. The detail of blood examination in tubercular disease is one of elaborate technic. The study of hematology, as we know, is as yet imperfectly developed, and while the present methods of clinical examination are thorough and up-to date in every particular, it is possible that errors may be discovered with improved technic.

The question of the apparent anemia in tubercular patients is one in which many theories have been advanced, but nothing definitely determined. We know that the paleness of the skin is not due to a lack of hemoglobin; it is only by following up lines of investigation and finding out the real cause which exists between the apparent anemia and pernicious anemia that we can acquire any data upon which to establish a differential diagnosis between the two conditions. This has been very ably accomplished by Dr. Johnson. His thesis is worthy of particular commendation, because he does not attempt to dogmatize, to establish a theory upon the results of his findings, but rather to make a plain statement of facts and allow us to draw from these facts our own deductions.

It has been stated by Leyden in "Musser's Medical Diagnosis," that pus micro-organisms were not found in the purulent contents of tubercular cavities. In Dr. Johnson's fifty cases pus micro-organisms were found in great abundance in each one of the cases. This discrepancy in statement may be due to the fact that in Leyden's cases there existed auto infection without communication of the cavities with the larger bronchial tracts; while in those observed by Dr. Johnson there existed direct bronchial connection with the cavities, and hence mixed infection resulted. These observations will go a long way toward placing upon a firm scientific basis the hematology of tubercular cases. It would be of vast scientific interest if some other observer, as fortunately situated as Dr. Johnson is, in contact with tubercular cases, could make a similar series of examinations. Then a comparative analysis could be instituted between the two series, and discrepancies and agreements might be readily ascertained.

I wish to congratulate Dr. Johnson on the scientific character of his work, and hope that this series of cases may be but the beginning of more and more work in this interesting and invaluable line of investigation.

Dr. R. B. PREBLE—I appreciate very fully the labor that Dr. Johnson must have expended upon this paper. There is no work which comes to the clinician that is more trying and requires more patience than that of hematology, and at the same time, it must be confessed, there is scarcely any work which brings us so little true satisfaction.

Certain conclusions were drawn by the essayist which, seems to me, were rather strongly stated. For example, t statement that a leucocytosis is pathognomonic of the presen of cavities, although we are unable to demonstrate them physical signs, can not be substantiated, because the leucocytosis which we find in cases in which cavities can be demonstrated is not due to the presence of cavities themselves, but the presence of bacteria which give rise to cavity formati These cavities are due not so much to the tubercular infecti as to the mixed infection. If we have the latter without ca ity formation we find leucocytosis also. So that the most can infer from the presence of leucocytosis is that we have a pure tubercular infection, but that we have added to it t more active pus bacteria, especially pus cocci.

It is interesting to note that Dr. Johnson has run acro cases of chlorosis. The dividing line between chlorosis a secondary anemia is not by any means a sharp one, so th cases of chlorosis and secondary anemia are not easily diffe entiated. It is interesting to note in this connection, that o of the questions which must always be considered when come in contact with chlorosis is whether we have a case chlorosis or one of incipient tuberculosis under the picture chlorosis. This frequently happens, especially in girls. The present apparently a chlorosis, and it is found later on not be true chlorosis but incipient tuberculosis.

I think Dr. Johnson is right with reference to his statemen of Neusser's granules. It is well known that Neusser is a litt inclined to attach too much significance to these granules; a yet one hesitates a good deal to question his conclusions, b cause he is a man of such great painstaking and exactness. was my pleasure to listen to Neusser's lectures for a number months. He is a man who is known among his immedia associates as one who is extremely careful both in his work an in making statements. He writes but little, but what he do is very good. While it would seem as if Neusser had ove drawn his conclusions, still one hesitates to question anythi that he says.

Dr. JAMES G. KIERNAN—It seems to me that a number points in general pathology, suggested by the paper of D Johnson, ought to be considered. For instance, take the que tion of chlorosis. At one time the attempt was made to dema cate hysteria from certain symptoms which occurred in th female from certain symptoms of precisely the same characte which appeared in the male. Here, as with chlorosis, the que tion was a difficult one to determine, because the female is mo liable to certain symptoms. Certainly, from this standpoint, D Preble's opinion regarding chlorosis does not seem to me to cov the point entirely. While it is true that chlorosis is premon tory of a large number of cases of tuberculosis, and while is equally certain that chlorosis occurs in all three types of th tubercular diathesis, is it anything more than the demonstra tion of the fact that a culture medium for the development the tubercle bacillus is produced by those conditions? Som years ago a very valuable brochure was published in a Herma series of clinical lectures by Sokolowski, in which he discusse a number of conditions mimicking tuberculosis. In a larg number of these conditions, while hematologic factors we not narrated, clinical phenomena were. These seemed to ind cate that chlorotic conditions resembling those occurring i the preliminary stage of tuberculosis were present in a numbe of cases of malaria, post-pregnancy and nervous exhaustio states. On the other hand, Sokolowski pointed out that prom inent among the tubercular affections which mimic other di eases is pseudo chlorosis. For a long time, he remarked, a cer tain connection between chlorosis and pulmonary tuberculosi had been noticed. Some forms of chlorosis attacking young women at puberty would obstinately resist otherwise success ful treatment and gradually pass into lung tuberculosis. The opinion obtained that the condition was simple chlorosis whic from some obscure cause passed into phthisis. Trousseau firs called attention to this condition, which he termed pseudo chlorosis, and showed it was a precursor of phthisis. The pal lor of pseudo-chlorosis is, as Sée has pointed out, often distin guishable from that of chlorosis. The pallor of chlorosis is waxen one shading into green. The pallor in pseudo-chlorosis is bluish-gray shading into ashen. It is of interest, therefore, to find that hematologic observation has confirmed these older observations in clinical medicine and has pointed out a basis for the semeiology. It is not surprising, therefore, that there should be conditions occurring in both male and female, who are victims of tuberculosis, which will mimic, if not actually be, chlorosis, and which is practically a culture medium for the development of tubercle bacilli.

With regard to the question of leucocytosis and cavity formation raised by Dr. Preble, there exists another factor in addition to what he called the most active agents of degeneration

the staphylococci, the streptococci, and the pus cocci in general. There is still that tendency from an expression of constitutional defect, in addition to the onslaught of the pus cocci, aided by the tubercle bacilli. I understood Dr. Johnson as saying that the condition prior to cavity formation was one of leucocytosis.

Dr. JOHNSON—I simply stated that where there was pus infection, even where there could not be a cavity demonstrated, leucocytosis was diagnostic of cavity formation, and I simply meant that it was diagnostic of bronchiectatic abscesses and smaller abscesses, which I believe would be difficult to demonstrate physically.

Dr. KIERNAN—Taking another phase of your paper, would you regard leucocytosis as an expression of a defect of vital resistance, or of the opposite condition—an attempt at repair?

Dr. JOHNSON—If there be a leucocytosis, I consider it an attempt at repair.

Dr. KIERNAN—That was precisely the position assumed by Sokolowski. In accordance with the usual laws of pathology, when there is an onslaught by active organisms, like the pus cocci, there is an attempt at excess of the white corpuscles, and hence, under ordinary pathologic laws, that should be expected in the case of a cavity where the vital resistance was sufficient, rather than the reverse. It seems to me, that is an expression of a pathologic law.

I do not think Dr. Johnson has taken too positive a standpoint in his paper. His findings have been merely put as strongly suggestive rather than as demonstrative. Considered from that standpoint, it is an extremely valuable contribution. Of course, there need to be undertaken a large number of control experiments along this line, but we must not forget that in hematology, as elsewhere, the old fiat that was pointed out by Bacon in his "Idols," that is, a man takes a label and proceeds to measure everything by it without reference to control experiments. This paper can only be criticised from its suggestive standpoint. It must be remembered that in pulmonary tuberculosis there are a great many phenomena such as occur in a large number of exhaustional conditions. They occur with greater rapidity; they are more demonstrable; they are mingled more with the minor phenomena produced by the tubercular changes, but still in a general way they resemble the other conditions of exhaustion. This is peculiarly true of the psychoses produced by tuberculosis. That being the case, one would expect a large number of phenomena having a close resemblance to other constitutional conditions modified more or less by the local states. As Dr. Preble has pointed out, a good many of the most difficult conditions that have to be dealt with in considering pulmonary tuberculosis are due rather to the secondary ravages of pus cocci than to the original ravages of the tubercle bacillus itself. But it should also be remembered, that while the tubercle bacilli can produce a constitutional condition which predisposes to pus cocci ravages, yet behind the tuberculous condition are a number of constitutional states, and all of these should be considered.

I would like to see, what I think will ultimately be made, precisely the same observations along the line of what Sokolowski has called pseudo-tuberculosis that have been made here, that is, observations to determine how much of these hematologic phenomena are produced by constitutional conditions which underlie and predispose to the tubercular condition, and how much of them are produced by the secondary consequences of the tubercular infection.

Dr. J. A. WESENER—Dr. Johnson has not overstated the case in saying that the specific gravity and Fleischl's method of estimating hemoglobin are very inaccurate. In normal blood all the hemoglobin is not oxyhemoglobin, but some of it is hemoglobin; furthermore, oxyhemoglobin is changed quite rapidly in the presence of air, etc. Fleischl's hemomometer is standardized to the color of oxyhemoglobin and it is this variation of color of the different colors of hemoglobins which makes this error. Hoppe-Seyler's method is very accurate and simple: he uses an apparatus composed of two compartments. One of these he fills with a standard carbonic oxid hemoglobin solution, and in the other he places the blood to be examined, and dilutes up to the mark with water, and then passes in carbon monoxid gas to saturation. We now have two hemoglobins, both of the same chemic composition, and, therefore, of the same color. We could apply the same method to Fleischl's hemomometer; instead of using an oxyhemoglobin prism, use a carbonic oxid hemoglobin prism, and then saturate the drawn blood with carbon monixid and place in the disc and proceed the same as given under the Fleischl's method.

With reference to pathologic leucocytes, I think Dr. Johnson's answer to Dr. Kiernan, that it is an effort at repair, is correct, and I believe if the urine had been tested in all of these cases albumose would have been found. This is always indicative of either pus formation or chronic suppuration. In simple tuberculosis we will not find any albumose in the urine. When we have mixed infection, especially when there is an effort at repair, albumose will be found in the urine.

Dr. JOHNSON (closing the discussion)—I wish to make myself clearly understood in regard to pathologic leucocytosis. I believe it is universally conceded by pathologists that where there is a pathologic leucocytosis, there is always a septic process, and that was the thought expressed in my paper. I desired to be understood as saying that where there are pus micro-organisms present, such as streptococci and staphylococci, and where there are purulent discharges in the sputum, demonstrated by microscopic examination, there is the formation of bronchiectatic abscesses. I stated in my paper that there are various degrees of cavity formation, as well as various degress in the septic process, and that is what I meant when I stated that a pathologic leucocytosis is diagnostic of cavity formation, although the cavity could not be demonstrated by physical examination. I desire to thank the members of the Academy for their attention and discussion of my paper.

Southern Surgical and Gynecological Association.

Eleventh Annual Meeting, Dec. 6–8, 1898.

(Concluded from page 1473).

Dr. A. M. CARTLEDGE of Louisville contributed a paper entitled

WHEN SHOULD WE OPERATE FOR APPENDICITIS?

He drew the following conclusions: 1. Probably 98 per cent. of the patients who die of acute appendicitis without operation have the fulminating variety of disease. Operation, to be of service, must be done in the first twenty-four hours, better in the first twelve. 2. In view of the fact that we have no means of knowing the probable course of a given attack of appendicitis, operation, when possible, should be performed within the first twenty-four hours after the onset of symptoms. 3. Patients seen after the third day should not be operated on until over the attack, or until purulent formations, if such take place, have been walled off and the patient practically rid of general sepsis. An exception to this rule is the rupture of an appendiceal abscess into the peritoneal cavity, a very rare accident, when abdominal section should be immediately performed. 4. Probably as many patients recover from general septic peritonitis by stimulants and purgatives as by operations. In either event, if it is a case of true general septic peritonitis, the mortality will not be far from 95 per cent. Contributions to medical literature would indicate that there is a sad need, on the part of the profession, of more definite views as to the nature of this disease. If operated on at all, no attempt at general cleansing of the cavity should be practiced; quickly assist nature to take care of the desperate patients, by removing the source of the foci. To do more is to add the shock of an unbearable operation to an already nearly exhausted vitality. 5. Subject to interval operation patients who have suffered unmistakable attacks of the disease. 6. Do not operate too soon after a severe attack with many adhesions; the operation will be greatly simplified by waiting a few weeks longer. In the meantime, keep the patient upon light diet and little exercise. Patients do not usually have a recurrence until the adhesions or splints have been removed by absorption. The mortality from interval operations should not be more than 1 per cent. In drawing the above conclusions, Dr. Cartledge wishes it to be distinctly and thoroughly understood that they are not to be considered in the sense of hard and fast rules, but simply as a working basis for the general practitioner.

Dr. GEORGE H. NOBLE of Atlanta read a paper on

URETERAL ANASTOMOSIS.

He gave an analysis of thirty cases collected from literature, and divided them into two classes: 1, ureteral anastomosis, or union of the ureter end to end or side to side; 2, ureteral implantation into the bladder. July 2, 1898, the essayist ligated the ureter with the ovarian vessels and Fallopian tubes in a case of large extraperitoneal fibroma. This was the very first ligature applied in doing the hysterectomy. The bladder end was split about three-eighths of an inch, as much of the mucous membrane as could be drawn out was cut away; then the upper or kidney end of the ureter was invaginated into it, using a mattress suture for the purpose. The split was then closed with fine sutures, making a snugly fitting cuff around the opposing end with no mucosa intervening. Small silk was used to stitch the raw edge of the inferior segment around and to the sides of the upper section. A peritoneal cuff was thrown around the joint thus made and the ureter buried behind the

peritoneum. The entire work was conducted with the aid of a ureteral catheter, which had been introduced through the ureter into the bladder and drawn out of the urethra with a pair of forceps. The upper end was passed into the kidney end of the ureter. This served a useful purpose, the entire manipulation being greatly facilitated and preventing obstruction of the ureter by crowding down the cut end of the mucosa just below the line of union. This case had suffered from absorption of pus for a number of weeks from double pyosalpinx, was emaciated and thoroughly septic. Her temperature just before going upon the operating table was 103 degrees, and had been running equally as high for the time she had been in the hospital and perhaps longer. Her pulse was 130, weak and thready. Thus this anastomosis was done under unfavorable conditions, but was successful.

In October, 1898, he did a successful resection of the left ureter in a case of extraperitoneal extension of sarcoma of the ovary. About one and a half inches of the duct was removed and the ends united as above. The peritoneum was stripped from the entire left half of the pelvis. The bladder was separated from the upper portion of the vagina, and also from the horizontal ramus of the pubic bone, and drawn up to left side to the ileopectineal line to cover or bury the ureter, and fastened with a silk suture. In this instance the ureteral catheter was introduced on the stiletto, and being stiffened by it passed directly out of urethra from the ureter; thus the use of forceps was necessary to fish it out of the bladder. Abdominal and vaginal gauze drains were used. There was no leakage.

The essayist said that there are several features necessary to success in doing ureteral anastomosis aside from thorough asepsis: 1. Perfect coaptation or invagination, which must be done in such a way that no mucous membrane can slip between the ends of the ureter. 2. The ureteral artery should be preserved in its continuity to the ends of the ureter. If this vessel be destroyed, when the ureter has been dissected loose from its attachments, it will perish beyond the point where it ceases to receive its blood-supply. The ends of the ureter should be cut back to the point where the artery is intact, lest under diminished blood-supply and tension it should perish. 3. All strain or tension must be relieved. Should union occur by first intention, the parts will separate as soon as the sutures cut out or are released. 4. There must be no obstruction to the flow of urine.

Dr. WILLIS F. WESTMORELAND of Atlanta presented a paper entitled

CARCINOMA OF THE BREAST.

He said that carcinoma now presents even a more serious problem than formerly, on account of its rapid increase. The proportionate mortality from cancer is four and a half times greater now than half a century ago. No other disease can show anything like such an immense increase. According to statistics, two out of every five cases of carcinoma in the female are of the breast. Over three-fourths of all the tumors occurring in the breast are carcinoma, or to be exact, of 637 tumors, over 503, or 83.20 per cent. were carcinoma, leaving only 107, or 16.79 per cent., representing all other forms of neoplasms. The author discussed the etiology of the disease at considerable length. Speaking of the pathology, he said there was no subject in surgery about which such divergent opinions are held. There is a wide variation in the malignancy of carcinoma, some proving fatal in less than a year, a few others taking ten or fifteen years. He divided the new varieties of carcinoma into the scirrhous and medullary or encephaloid. The former has an average duration of life of about thirty months, the latter of about twelve months. When it is considered that the skin and pectoral muscles are involved in nearly every instance in this disease, the surgeon can easily see the philosophic reasoning upon which Halstead's operation is based. The essayist follows the Halstead method in carcinoma of the breast. He believes, however, that Dr. Bloodgood was the first to demonstrate the advantages of completely cleaning out the posterointernal subscapular region by the supraclavicular route. The results of the Halstead operation, in the opinion of the essayist, depend upon the ability of the individual operator, his earliness in seeing the case and his closeness in following Halstead's technique. This operation not only requires surgical skill and experience, but proper respect for the magnitude of small things.

In the opinion of Dr. Westmoreland, no surgeon will make a satisfactory operation on his first few cases. He finds that with each case he operates more satisfactorily. The operation does not present the seriousness that its magnitude would lead us to believe. He has operated six times before his class at a public clinic and transferred the patients afterward, at times quite a distance, to their homes. In his first operations he had some shock from exposure, but this is easily controlled by placing hot towels over the exposed surfaces. There is practically no blood lost in a properly made operation. It is better to complete the operation, grafting included, at one sitting. When, for any reason, this is not practicable, the cleaning out of the supraclavicular region and the grafting can be made at a second operation. When grafting is done at a second operation he finds it better to remove the granulations. This is best done by curetting. In two of his cases it was necessary to remove the subscapular nerves, and in another to resect the axillary vein. No unpleasant sequelæ followed in either case. He has operated upon over fifty cases of carcinoma since he began surgical work, and has always cleansed out the axilla and stripped the muscles in each case. He has been making Halstead's operation since its introduction. He does not know the results in the majority of these cases. Two of them, however, came back to him with later recurrence, one with a carcinoma of the femur five years after the operation, no local return; the other with a local return in the cicatrix nine years afterward. This case died in a short time from metastasis. He feels quite sure that these were not independent new growths. There is always one rule, that the more malignant the case, the greater the blood changes.

The primary object of the paper was to point out the fact that a careful clinical examination of each case, a record of the local conditions, the type of tumor, the blood changes, whether or not there was marrow infection, the family history, and the length of time it had existed, would not only give definite facts upon which to base a prognosis, but, if published with each case, would give all surgeons a record of infinite value for comparative purposes.

Dr. I. S. STONE of Washington, D. C., contributed a paper on

THE RARITY OF OVARIAN CYSTS IN NEGRESSES.

After several years' experience in a hospital for women, where a large number of negresses are annually treated for gynecologic diseases, and where cases of uterine myomata are frequent, the writer has noticed the extreme rarity of ovarian neoplasms and especially of the multilocular variety. He addressed letters to all the members of the Association and to several other prominent surgeons elsewhere, and of the large number who replied to his inquiry there was almost universal acquiescence in the position taken by him, save from one important medical center, i. e., New Orleans. According to the records from the hospitals of this city, cysts of the ovary of all classes are rather more frequent in the negro than in the white. Leaving aside this one source, the author advanced overwhelming testimony favoring the view that ovarian tumors are exceedingly rare in the negro race. The essayist makes a careful distinction between multilocular and unilocular cysts, because there can be no doubt about a diagnosis at the time of operation when a multilocular cyst is found. It is otherwise with parovarian cysts or those of the broad ligament, etc., which are perhaps classified as ovarian, and their removal called ovariotomy in hospital reports or operation lists, when, strictly speaking, they are not ovarian tumors. He has frequently operated for dermoid, papillomatous, parovarian and broad ligament cysts in negresses (although most of these in mixed cases), but has not seen a multilocular ovarian cyst.

Dr. F. W. PARHAM of New Orleans read a paper on

RESECTION OF THE THORACIC WALL FOR TUMORS GROWING FROM THE THORACIC SKELETON.

He reported two such operations of his own with successful results. Both operations widely opened the pleural cavity and the lung collapsed in both. In the first the collapse was relieved only when the great pectoral muscle was brought down and sutured to the rent in the pleura. In the other, signal service was rendered by the Fell-O'Dwyer apparatus for maintaining regular respiration. He believes the perfection of this apparatus and its application in skillful hands will greatly aid in the developing of the surgery of the chest. He had collected all cases operated on up to date with a mortality of 25 per cent. for the intrapleural operations for tumors of the chest wall.

Dr. W. L. ROBINSON of Danville, Va., presented

A CLINICAL REPORT ON THE USE OF ANTISTREPTOCOCCIC SERUM IN SEVEN CASES OF PUERPERAL SEPTICEMIA, FOUR OF POST-OPERATIVE SEPSIS, THREE OF SEPTIC CELLULITIS, AND TWO OF ERYSIPELAS.

The use of antistreptococcic serum in puerperal fever, aseptic cellulitis, post-operative sepsis and erysipelas, comprises seven cases of puerperal fever treated by him with high fever, rapid, weak pulse, characteristic breath, chilliness, nausea and insomnia, pelvic tenderness, with scanty, fetid lochia. From 12 to 20 c.c. were injected after the usual treatment had

failed, including irrigations, intra-uterine and vaginal, sealing abrasions of the cervix and perineum, saline injections, purgatives, stimulants, etc., with prompt improvement in the general condition, rapid fall of temperature, lowering of pulse-rate, and complete recovery. The effect was manifest in from eight to sixteen hours in the majority of cases. In three post-operative cases of sepsis, seemingly hopeless, all usual treatment failing, the serum in twelve hours transformed every symptom of high fever, chilliness, rapid, weak pulse, diarrhea, etc., into a hopeful condition, resulting in rapid recovery. Pain subsided in twelve hours, fever in eight hours, diarrhea in forty-eight. One was a vaginal hysterectomy; the second was operated on for the removal of pus-tubes, and the third was a vaginal hysterectomy. Three cases of septic cellulitis consisted of suppurative cellulitis of the hand, commencing in the finger, one of injury from a rusty nail, and the other from the spur of a cock. Both had been treated by general alterative tonics and locally with improved antiseptic measures, but the disease progressed daily, involving new tissue till the serum was used, which promptly arrested the progress of the disease in both cases and saved the hands. A third case was a gun-shot wound of the ankle, with marked septic prostration, chills, diarrhea, etc., which was dissipated promptly by the use of the serum, so far as fever and general septic symptoms were concerned.

Two cases of erysipelas: One, 16 years of age; abscess following extraction of tooth, discharging at two points on the neck. Redness and swelling covered one-half of the face, nose and head. Temperature 104.4 degrees; pulse 140; delirium, vomiting, chilliness, etc. Ten c.c. of the serum were injected at nine P.M., resulting in fall of temperature to 100 degrees. Next morning there was complete arrest of all symptoms, followed by prompt recovery. The second case was one of nephritis; puffed eyelids and face; erysipelas of the thigh; hard, red, shiny swelling; delirium; two injections used in twenty-four hours rendered patient convalescent in thirty-six hours. The serum used was that of Parke, Davis & Co.

Dr. J. B. MURFREE, of Murfreesboro, Tenn., followed with a paper on

PENETRATING WOUNDS OF THE CHEST.

He confined his remarks largely to wounds of this region. Such a wound is produced usually, by external violence where the walls of the chest are penetrated and the offending substance enters the thoracic cavity. It is a wound where not only the chest-walls are injured, but also the tissues and oftentimes some of the viscera within the cavity. Penetrating wounds of the chest vary in their extent, character and severity. They vary from a small perforation with a delicate knife blade or small bullet, merely separating the tissues without inflicting any serious injury, up to a fearful laceration with great loss of tissue or serious damage to an organ produced by a large knife or a minie ball. Wounds penetrating the chest are dangerous from hemorrhage, from the admission of air into the pleural cavity, producing collapse of the lungs, from emphysema, from empyema, from septicemia and exhaustion. When a large vessel is injured, death quickly ensues from loss of blood; while injury to smaller vessels may endanger life and even prove fatal from continued or frequently repeated hemorrhage. The symptomatology and treatment of these wounds were dwelt upon by the essayist at considerable length.

Dr. GEORGE S. BROWN, of Birmingham, Ala., reported a case of vesico-rectal fistula of eight years' standing, the result of perineal lithotomy, with cure after ten operations.

The following officers were elected for the ensuing year: President, Dr. Joseph Taber Johnson of Washington, D.C.; vice presidents, Drs. F. W. Farham of New Orleans, and W. L. Robinson of Danville, Va.; secretary, Dr. W. E. B. Davis of Birmingham, Ala.; treasurer, Dr. A. M. Cartledge, of Louisville; to fill vacancy in the Council, Dr. L. McLane Tiffany of Baltimore.

New Orleans was elected as the next place of meeting, time to be determined by the Secretary with advice of the Council.

After the presentation and adoption of resolutions of thanks, the Association adjourned.

Cincinnati Academy of Medicine.

Regular Meeting, Dec. 6, 1898.

Dr. E. H. SHIELDS contributed a paper to the meeting entitled

THE HYPODERMIC METHOD IN THE TREATMENT OF SYPHILIS.

He had used this method in some seventy-six cases in private practice and in many more in charity work, and always with the best of results, the manifestations of the disease disappearing with from twenty-six to sixty injections. He had given over seventeen hundred injections without abscess formation and attributed this good result to several reasons: that the injections were deep intramuscular; that he did not use calomel; that the solution used was sterile. In this latter connection he thought not enough care was taken in rendering the preparation sterile. He usually, though not invariably, used the bichlorid of mercury, and the injections were usually given about once a week. The pain of the injection was not very severe and was often preferred by the patient to the inunction treatment. He especially recommended this method in the roseola stage, when the face was involved and it was desired by the patient to most quickly rid himself of this early lesion; and also in those secondary eruptions that resisted other methods of treatment, as the so-called psoriasis palmaris luetica. In a case of iritis the pupil had responded to atropin only after the injection treatment had been instituted, though the internal administration of mercury had been pushed to the limit. (A similar experience was mentioned by one of the subsequent speakers.) Among all his cases he had had but one recurrence.

Dr. RAVOGLI opened the discussion, saying that he had read a paper on the hypodermic treatment, seventeen years ago, before the Academy. At that time, when calomel was used almost exclusively, when the injections were subcutaneous, and when but little was known of aseptic technic, abscess formation on the fifth or sixth day was very frequent. To be sure, previous to suppuration the mercury in the system had accomplished wonderful results. He himself had had one case develop gangrene, and death had almost resulted. The patient had been confined to bed many weeks. Another objection to the use of calomel was the tendency to an early production of ptyalism; once injected, absortion would continue from the reservoir until the supply was exhausted. The ptyalism would become worse, and nothing could be done unless the points of injection were incised. He had abandoned the method many years ago, but of late he had treated some of the inmates of the Cincinnati Hospital by hypodermic injection. He found that the neurotic condition usually present among the women of a venereal ward was greatly increased. The pain of the injection was greatly complained of, often lasting several weeks, almost always causing a decided limp on the day of the injection. Nodules were often formed at the point of the injection which persisted for months. He agreed with the essayist as to the good results obtained by this method in malignant cases of syphilis, and had often seen lesions most persistent to other methods of treatment clear up rapidly after a few injections. He thought that it was for these cases particularly this treatment should be reserved. He did not believe in treating all cases indiscriminately by means of any one method of treatment. Drs. Heidingsfeld, Merrill, Ricketts, Weaver, H. M. Brown, Marcus, Haines, and the essayist, also discussed the paper.

Dr. BYRON STANTON, local member of the Ohio State Board of Health, read some interesting facts regarding the presence of smallpox in the State of Ohio, stating that the subject was of general interest in that it had assumed almost the proportions of an epidemic, and that because the type of the disease had been almost universally mild it had been mistaken in many places for chicken-pox. The latter, to obscure matters more, had indeed been prevalent at several places where undoubted cases of smallpox were also raging. The present epidemic had begun in March of the present year, having been brought to Carroll from Georgia. Several members of an "Uncle Tom's Cabin" troupe had become infected, but the mildness of the cases baffled the attending physicians and no precautions had been taken to prevent spread. In all, about 550 persons had been attacked, almost all persons who were neither protected by a previous attack nor by vaccination. The mildness of the present epidemic is shown when it is stated but five deaths have occurred out of the total number of cases reported. Over thirty towns have suffered, including the cities of Sandusky, Cleveland, Dayton and Cincinnati. In the latter city, up to date, nine cases have been reported and isolated at the Branch Hospital. In most of these cities the "Uncle Tom" troupe had given performances. To their credit it may be said that they were unaware of the nature of the disease attacking their various members. They are now happily corralled in Cincinnati. The town that has suffered the most is Loveland, between twenty to thirty miles from Cincinnati, on the Pennsylvania Railroad. This place is not yet free from infection.

Regular Meeting, Dec. 12, 1898.

Dr. O. P. HOLT presented a patient afflicted with pernicious anemia. The principal point about the case was that the diagnosis had been positively made about two years ago (Jan-

uary, 1897), and that he had been incapacitated from work for fully a year before that time by weakness, loss of strength, palpitation and shortness of breath. He was admitted to the Cincinnati hospital, January, 1897, with the above symptoms and also with great edema of the lower extremities, the external genitals, and the face, particularly the eyelids. The skin was of a decided lemon-yellow color. He was very well developed and not emaciated. During the year of his illness he had consulted many physicians, and diagnoses of all kinds had been made: Bright's disease, heart disease, particularly malaria, but never pernicious anemia. A careful examination of the urine, quantitative, qualitative and microscopic, showed the kidneys to be normal. The heart was normal, aside from soft, blowing, systolic murmurs, not constant, heard indifferently at apex and base, which murmurs could be readily accounted for by the anemia. The lungs were normal, also the liver and spleen. There was no history of venereal disease or of alcoholism. The examination of the blood showed the reds to be in the neighborhood of one million, the whites about three thousand; the hemoglobin estimation showed the individual corpuscular richness to be above normal, taking the number of reds into consideration, so that the color index was above one. The stained specimens showed marked poikilocytosis, both in size and shape. Nucleated cells were not common, but the normoblasts exceeded the megaloblasts. This latter point—the excess of normoblasts over megaloblasts—has always been regarded as a rather favorable sign as far as prognosis is concerned. He thought that the increase in hemoglobin was due to the fact that the average size of the reds was above normal. The eye grounds were normal, and no retinal hemorrhage had developed. The stools were examined frequently for parasites, as described to be occasionally present by some observers, but none were found. Indeed, no gastro-intestinal complications had been observed at any time. The patient was kept in bed, functions kept normal, and arsenic administered in the form of Fowler's solution, and gradually increased until he was taking fifteen drops three times a day without discomfort. The edema gradually disappeared, he became stronger, his red count gradually increased to almost three millions and at the end of three months he was discharged at his own request, greatly improved, as he thought well. To the present time he has been kept under observation, and during this interval has had two typic relapses, which latter are regarded as very characteristic of the disease. His last count showed the following: reds, 2,700,000; whites, 7,000 (very unusual, as a leucopenia is almost always present); hemoglobin 43 per cent., differential count (500 whites): small lymphocytes, 36 per cent.; large lymphocytes, 1.2 per cent.; neutrophiles, 60.4 per cent.; eosinophiles, 2.4 per cent.; no myelocytes. While counting the five hundred whites, twenty-six normoblasts and one megaloblast were observed. In puncturing the ear to obtain the blood, the latter flows with great difficulty, and deep puncture has to be made so as to obtain sufficient blood for examination without resorting to pressure. The blood remains fluid for a long time and seems to have very little power of coagulation. Poikilocytosis, while present, is not so marked as at previous examinations. In the treatment of this disease many remedies have been used with apparently little success. While temporary improvement has followed the exhibition of several, this good effect could not be properly assigned to the drug in question, as it is well known that many cases have improved without medication, and relapses, as he had said before, were typic of the disease. Iron he regarded as useless, as the disease was not looked upon as resulting from increased destruction of reds, but to something interfering with their proper manufacture. Various body extracts have been used, but with little good effect. Bone marrow has been reported of value in some cases, but the time is not yet ripe to ascribe too much to this remedy. Arsenic, in the form of Fowler's solution, which this patient has taken freely, is looked upon by most authorities as the most valuable agent as far as we now know.

Dr. C. A. L. REED read a paper on "Fat and Fecundity," which was discussed by Drs. C. E. Caldwell, Bonifield, H. M. Brown, T. Louis Brown, Kiely, Haines, Fraid, Johnston, Ricketts, Judkins.

The French Congress of Urology.

Paris, October, 1898.

ALBARRAN, HALLE and LEGRAIN presented the subject of

VESICAL INFECTION.

They stated that in 304 cases examined the bacterium coli was found 131 times, pure in 98; the pyogenic staphylococcus was found 70 times. The pyogenic streptococcus has only been noted eighteen times in literature. In their experience gonorrheal infection very frequently depends upon the action of the gonococcus exclusively. Fraenkel's, Friedlander's and the typhus bacillus are but rarely encountered, while the Koch bacillus is among the most frequent agents of vesical infection. The recent discovery of anaërobic micro-organisms in vesical infections throws a new light on certain gangrenous and fetid processes. The diagnosis depends upon histo-bacteriologic analysis of the urine, which differentiates bacteriuria from cystitis and determines the extent of the lesions. The destruction of the micro-organisms by medical means is usually unattainable; surgical intervention is necessary to evacuate the results of stagnation of urine and apply antiseptics or open up the organ, insuring drainage and repose.

CARLIER reported two cases of vesical infection consecutive to dysentery in which the infection must have proceeded from the intestines, and yielded to energetic medication.

PICQUE extolled the value of the hypogastric incision in vesical infections except in the case of ascending infection with severe lesions of the upper urinary passages. The gravity of this operation has been much overrated.

JANET emphasized the contagiousness of vesical infections, mentioning an instance in which he found the same diploconic bacillus in the urethritis of two men which he had noted in the bladder of their common mistress. He considers sexual relations counter-indicated in case of vesical infection, even bacteriuria. Others confirmed this statement with numerous instances of urethritis contracted from vesical infection in others.

HAMONIC recommended permanganate as an especially effective antiseptic for the bac. coli; sublimate and mercuric biniodid for the staphyl- and streptococci; copper sulphate for the gonococcus and zinc chlorid for the Koch bacillus.

ESCAT related the case of a young man with acute gonorrhea who was seated and in erection, when another person sat down in his lap, causing a spongio-fibrous rupture of the urethra, with the immediate formation of a diffuse sanguine infiltration in the entire perineal region, and in the course of several months complete retention, with lesions requiring internal urethrotomy and dilation.

BOECKEL reported a case of rupture of the urethra back of the ligament of Carcassone, from a very violent shock to the perineum. A suprapubic median laparotomy evacuated a pus pocket and disclosed the location of the solution of continuity of the urethra, but a few weeks later symptoms of constriction required external urethrotomy, a hypogastric incision and retrograde catheterism, with a sound left for three weeks before complete recovery.

LEGUEU reported an extensive urethral breach filled by the lining process devised for vesico-vaginal fistulas. The patient kept the permanent sound twenty days, but she is now completely cured. Permanganate was preferred to protargol by several members for gonorrhea.

ESCAT proclaimed the superiority of cyanid of mercury for this affection. From 1 to 5 per cent. solutions can be used progressively and as much as a liter, without inconvenience to the organ or organism. It induces a serohematic exudation in the urethra which proves an effective serotherapy against the gonococci, and when better appreciated will render valuable services in gonorrhea and perhaps in all urinary affections.

MONOD confirmed its value from experience, although he observed that the application is sometimes painful. The pathogenesis of secondary aseptic urethritis in persons with a gonorrheal past was discussed, and instances related in which the bicycle, coitus and the immoderate use of beer produced it.

CARLIER of Lille has even observed cases of urethritis in men without venereal antecedents but addicted to beer to the extent of twenty liters in the twenty-four hours.

ABARRAN reported six observations of double angioneurectomy for hypertrophied prostate, all satisfactory and cases remarkably improved. The results of vasectomy reported were twelve cures, ten improved and twelve failures, out of forty cases operated (Nicolitsch), one absolute failure (Reynès). Six cases remarkably improved by the Bottini operation were reported.

COTTET described a case of acute prostatitis following a two months' old gonorrhea, requiring the prerectal incision and evacuation of the abscess, in which the gonococcus was found pure, furnishing fine cultures. He can find no similar case in literature.

DESNOS observed, in regard to prostatic calculi, that they can be reached by the perineal route if they are small or medium-sized, but if they are found too large to extract by this means, even after the perineum has been opened, the hypogastric incision must be resorted to.

A number of cases of vesical tuberculosis were reported

cured with cystotomy, curetting and cauterizing the inner surface of the bladder.

NOGUÈS has been very successful in some recent cases with instillations of a 1 to 4 per cent. solution of ichthyol.

VIGNARD protested against the laborious enucleation of the organ, which too frequently preceded nephrotomy.

LOUMEAU does not advocate in general immediate suture of the kidney after nephrotomy for calculous anuria, but reported two observations in which the catgut suture healed by first intention without any filtering of urine through the wound.

ALBARRAN always leaves a drain in the kidney reaching to the pelvis after nephrotomy for calculous anuria. He reported several cases of pyelonephritis treated with lavages of the pelvis with boricated water and nitrate of silver, 1 to 1000. He urged all to establish better the indications for catheterism of the ureters. He only applies it in bacteriuria in the rebellious form, and the precaution of a lavage of the kidney will forestall accidents. In severe pyonephrosis he only resorts to catheterism just before the surgical intervention.

HOGGE recommended salol, 9 grams a day, as a preliminary to catheterism of the ureters for vesical bacteriuria.

DESNOS has observed chills and fever follow catheterism of the ureters and cease as the catheters were removed. In one case an intense chill followed catheterism for a severe pyonephrosis, with death in three days, suggesting caution in catheterizing.

"Essential Hematuria" is the subject announced for discussion next year.

PRAGTICAL NOTES.

Plastic Surgery in the Mastoid Process.—Von Mossetig-Moorhof describes, in the *Cbl. f. Chir.* of November 19, his method of closing a defect after ablation of a cholesteatoma in the ear, and all danger of recurrence is past. He cuts a tongue-shaped flap below the defect, after freshening the edge between two parallel lines drawn around the edge of the flap. The edges of the defect were detached all around so that they could be lifted with a hook. The flap was then turned back over the defect and the edges of the flap pushed under the raised edge of the defect all around. Four stitches held it in place and the space left by the flap was sutured in a straight line. The exposed under surface of the flap covering the defect cicatrized over in his six cases in two weeks. An extraneous flap might be applied, if desired, to render the operation more cosmetically complete.

Plastic Surgery of the Eyelids.—Professor Angelucci describes the following cases as a typic illustration of his method: After removal of an ulcerated epithelioma requiring the excision of both lids, of the lachrymal gland and of some neoplasmic nodules in the tissues of the orbit, two large flaps were cut, one on the brow and the other on the cheek, extending down to within one centimeter of the angle of the jaw, sliding the flaps together and suturing them with the horizontal median line of the orbit between, the eyebrow on the upper flap a little lower than its normal position. The orbital edge of each flap was sutured to the conjunctiva of the cul-de-sac, except in the internal angle, where it was sutured to the peripheral segment of the bulbar conjunctiva, which had to be detached up to the limbus. The *Rev. Gen. d'Ophthalmologie* for October 31 illustrates the results a couple of months later. The new lids work and wink well, the secretions of the conjunctival sac are sufficient to protect the corneal epithelium, and although the cosmetic results might be better, the important problem of protecting the eye is solved.

Surgical Treatment of Ulcer of the Stomach.—Berg urges the publication of all cases after having been followed long enough to determine the ultimate results, as the indications are still so uncertain. He describes thirty cases operated on. The first ten were ulcers with infiltration simulating a palpable tumor. His conclusions from the results attained were that pyloroplastics is inferior to gastro-enterostomy, which must occasionally supplement segmentary resection. The exclusion of the pylorus supplemented by gastro-enterostomy, protects best against the danger of progressive infiltration and perforation, when it is impossible to excise it as in certain cases. Seven cases of cicatricial stenosis of the pylorus were treated with gastro-enterostomy (in one case preceded by ineffectual pyloroplastics). The rest were for various benign affections. He warns against attributing serious gastric disturbances to hernia, and advises an exploratory laparotomy when the hernia is operated on. All his cases recovered. *Nordiskt Med. Arkiv.*, xxxi, 5.

Bonain's Local Anesthesia.—This process comprises the anesthesia of the external surface of the tympanic membrane with a mixture of phenol, menthol and cocain hydrochlorate, āā 1 gm., or 2 gm. of the phenol to .5 gm. or 1 gm. of the other ingredients. The internal surface of the membrane and the mucosa of the tympanum are anesthetized with two or three drops of a one-tenth solution of cocain instilled by an incision or incisions made in the membrane with a Hartman canula, mounted on a small syringe. The blood flows very little, if at all. His experience includes twenty-eight operations; paracentesis, destruction of synechiæ, mobilization, ablation of the ossicles, total ablation of the tympanum, also for hypertrophied tonsils and tuberculous infiltrations and vegetations of the larynx.—*Rev. Hebd. de Laryng.*, etc., November 26.

Cocain and Spartein Anesthesia.—Bagot combines spartein with cocain, which obviates the depressing effect of the cocain on the heart, while rendering the anesthesia more lasting. He has a powder prepared beforehand: cocain hydrochlorate .04 gm., and spartein sulphate .05 gm. When ready to use, the powder is dissolved in one or two cubic centimeters of boiled water. As much as eight to twelve centigrams of cocain can thus be injected in fractional injections without accident. In operating on a tumor he injects 1 c.c. of the weaker solution on one side, and waits seven or eight minutes before injecting the other side. He can then commence the operation in a few minutes on the side first injected. If the operation requires over twenty minutes, a third injection can be made, which keeps up the anesthesia for three-quarters of an hour.—*Gazette Méd. de Liège*, December 1.

Paroxysmal Hemiglobinuria.—In a discussion of several cases at the Berlin Medical Society, it was established that exposure to cold, even walking around barefooted in a bed-room, would in certain persons produce an attack of hemiglobinuria. The blood came from the ureters in one case. Avoidance of getting chilled has arrested the affection in certain cases as reported; Ewald observed that he had never derived any benefit from amyl nitrite, which has been recommended for hemoglobinuria.

Anthrax on the Nose.—A. Strubell reports a severe case of gangrenous and necrotic anthrax spreading from the tip of the nose, with chills, fever, etc., completely cured with scarcely a scar, by frequent injections of a 3 per cent. solution of carbolic, a total of 400 Pravaz' syringefuls in eighteen days, combined with copious stimulants, warm baths, and hot cataplasms at a temperature of 50 to 55 degrees C., applied locally every ten minutes, night and day. The growth of the anthrax bacillus is checked at 40 degrees and permanently arrested at 42. Cultures from the nose were very virulent, but no bacilli were found in the blood.—*Munich Med. Woch.*, November 29.

Aneurysms of the Arteria Ilio-femoralis.—The *Vienna Klin. Woch.* of November 24, contains a detailed review of eighty-five cases in literature and a personal case, by F. Schopf. He concludes: Compression should be attempted in every case if possible. It may cure alone and, if not, it at least prepares the way for a collateral circulation. If an operation is finally required, total extirpation, if practicable, is the safest method to follow. It ensures best against recurrences, promotes the development of the circulation, is no more dangerous than any other method in respect to the wounds and renders rapid

recovery possible. The number of total extirpations of all kinds of aneurysms is increasing; according to Delbet's statistics, from 1875 to 1887, 320 aneurysms were treated with ligatures and 63 with total extirpation, or one extirpation to each five ligatures, but from 1887 to 1894 there were 189 ligatures to 76 extirpations, or one to two and a half ligatures.

Radical Cure of Mal Perforans.—Chipault has cured twelve out of fourteen cases by stretching the nerve, followed by cleaning out the ulceration, removing all necrotic bone and horny edges, concluding with an aseptic bandage. All were cured, but two relapsed (four months to three years). The nerve should be stretched not too far from the spot, and still not too near. Nine times it was the nervi plant. int. and ext.; once the plant. int. alone; once the collateralis int. of the great toe, and three times the saphenous ext. at the edge of the Achilles tendon. The nerve is stretched with the finger or a forceps, principally toward the distal end. He noted in the etiology: tabes, diabetes, syringomyelia and alcoholism. The evacuation of the ulcer alone will not cure, but stretching the nerve alone will accomplish it, though much more slowly. He believes that stretching the nerve is also applicable to tumors on amputation stumps, and zoster eruptions, as well as to other cutaneous affections with a nervous basis.—*Cbl. f. Chir.*, November 19.

Wounds of the Heart.—Professor Rydygier opens up the heart by a horizontal incision starting a little to the right of the sternum, and extending through it and still farther to the left, just above the third rib. The incision is then carried downward, obliquely outward to the left, including the left third, fourth and fifth ribs. The periosteum is then cautiously detatched from the sternum, and the bones sawed. The triangular flap thus made is carefully raised, keeping close to the bones and detatching the muscles. The heart is thus amply exposed, while there is no danger of injuring the pleura or pericardium, and the liability of foam production is reduced to the minimum. Riedel states that in one case the air getting into the pericardium with the blood from the wound churned the blood into foam by the heart action, until it poured down over the whole chest wall. Rydygier's flap has only been tested on the cadaver.—*Vienna klin. Woch.*, November 24.

Dressing for the Umbilicus.—S. I. Kouzmine has devised a treatment for the umbilic wound that has proved extremely successful in forty-two cases. He slips an elastic band over the cord, 3 mm. thick, 9 in diameter and stretching to 3 or 4 cm., pushing it down over the cord to within a centimeter of the abdominal wall. No further ligature is required. The stump is then covered with two or three folds of plastered cloth, which hardens into a solid shield protecting the umbilicus from infection, and undisturbed by bathing the infant, etc. To prevent injury to the abdomen a strip of cotton is inserted around its lower edge, and a cloth bandage to hold it in place. The plaster is left untouched until the cord drops off, when the stump will be found mummified and aseptic.—*Semaine Méd.*, November 30.

Dangers of Lumbar Puncture.—The usually harmless lumbar puncture may lead to fatal results in persons with abnormal cerebral vascularization, the same as a cranial injury on a normal person produces a bulbar shock for a moment, which soon passes away, while the same shock in a pathologic condition may entail the most serious consequences. *Le Lyon Med.*, reports the case of a syphilitic with abrupt, complete paraplegia, resisting all treatment for two years, when Jaboulay resolved to try lumbar puncture. Ether; 20 c.c., of a clear fluid escaped, and 10 c.c. of a 5 per cent. solution of iodin were injected. While the patient was still half drowsy from the anesthetic, the respiration suddenly ceased, although the heart and pulse were beating regularly and there was no marked cyanosis. In spite of artificial respiration, traction of the tongue, etc., it was impossible to re-establish normal respiration, although the heart and pulse action continued normally for over an hour and did not finally cease for an hour and a half. The necropsy disclosed generalized syphilitic myelitis, with a softened focus in the left brain, no alteration noted in the medulla, liver or heart, but multiple syphilitic gummata in the right kidney.—*Presse Med.*, November 19.

Diffuse Parenchymatous Keratitis.—Syphilis has been found the most important factor in the affection in Panas' experience, but in from 30 to 50 per cent. some other cause must be sought. It is also observed in animals, which do not have syphilis. Tuberculosis was noted in tweve out of fifty-one cases and next in the etiology, impaludism, influenza, rheumatism, gout, uterine affections and rhachitism. The usual treatment was deep injection of mercuric iodid, and then potassium iodid administered internally, in tuberculous cases, deodorized iodoform in powders. Paracentesis of the anterior chamber and iridectomy, seem to act favorably in chronic cases.—*Presse Méd.*, November 19.

New Symptoms of Measles.—Meunier has noted a marked loss of weight in persons during the incubating stage of measles, when there are no symptoms as yet to indicate the disease. It is noticeable four or five days after contagion and amounts on an average, to 300 or 50 grams a day in child of 1 to four years. It may even attain 790 grams. This progressive loss of weight continues several days and seems to be independent of the age, or severity of the affection afterward. He suggests that it may prove important in indicating and isolating the disease in schools, etc.—*Gaz. hebd. de Méd.*, 89.

Formulæ for Cuticolor Ointments and Pastes.—Rausch has been devoting much time to studying the best combinations for this purpose and testing them. He recommends the following formulæ, all for external use. The ichthyol preparations are adapted whenever an enemic and vaso-constricting effect is desired. Sublimate can be added at will, without affecting the color. 1. Cuticolor zinc ointment: Armenian red bole .03 gm., glycerin 6 drops, zinc ointment to 10 gm. 2. Una's zinc paste: Armenian bole .24 gm., glycerin 20 drops, eosin (1 to 500), 8 drops, zinc paste 40 gm. 3. Una's zinc sulphate paste: Armenian bole .24 gm., glycerin 20 drops, eosin (1 to 500) drops, paste of zinc sulphate 40 gms. 4. Una's ichthyolized zinc paste: ichthyol, 1 per cent., zinc paste 30 gm., eosin (1 to 500) 16 drops. 5. Ichthyol, 2 per cent.; zinc paste 40 gm., eosin (1 to 500), 20 drops. 6. Ichthyol, 3 per cent.; zinc paste 40 gms., eosin (1 to 500), 22 drops. 7. Ichthyol, 4 per cent.; zinc paste 40 gm., eosin (1 to 500), 40 drops. 8. Ichthyol, 5 per cent.; zinc paste 40 gm., eosin (1 to 100), 12 drops. Cuticolor gelanthum: Armenian bole .02 gm., eosin (1 to 500) 2 drops; zinc oxid 6 gm., glycerin 3 gm., gelanthum 20 gm.—*Journ. de Méd. de Paris*, November 27.

Sanguinoform.—C. S. Engel of Berlin has applied to therapeutics the physiologic fact that the red-blood corpuscles in the embryo of mammals are nucleated and peculiarly rich in hemoglobin. He procures the embryo of the pig in large quantities, fresh from the slaughter-houses, and produces a powder from the blood-forming organs, desiccated and pulverized, with two parts sacch. lact.; a trifle ol. menth. pip., and for some cases, 2 per cent. ferrum oxydatum. This is administered, per os, three times a day, each dose, from what can be taken up on the point of a knife to half a teaspoonful. He is much gratified at the results attained, which correspond to the theoretic assumption of the value of this treatment with physiologic hemoglobin. In a boy of 7 years, the specific gravity of the blood rose from 1046 to 1057; the hemoglobin increased rapidly from 40 to 60, and finally to 75 per cent., in the course of two and a half months. His investigations were made on ten subjects, mostly chlorotic girls, and every two or three weeks the blood was carefully tested for its specific gravity, alkalinity, amount of hemoglobin, proportion of red and white corpuscles, blood plates, etc. His communication in the *Deutsche Med. Woch.* of November 24 is a theoretic and practical study of our present knowledge of the subject.

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INJURY OF THE SPINAL CORD WITH SYMPTOMS OF SYRINGOMYELIA.

When the condition of syringomyelia was first described, it was believed that the accompanying symptoms were distinctive and characteristic, and that the peculiar sensory dissociation observed was pathognomonic, but time and experience have not unqualifiedly sustained these earlier notions. It has been abundantly shown, clinically and pathologically, that the symptoms, except as to their mode of onset and course, bear no relation to the process itself or to the nature of the lesion, but rather to its situation and extent. So-called syringomyeliac symptoms have been observed in association with cavities, neoplasms, hemorrhages, traumatism and other lesions of the spinal cord; and the manifestations vary in accordance with the structures involved. Most often the multipolar ganglion-cells of the anterior horns of the cervical cord are affected, so that weakness and wasting of muscles in the upper extremities result; while involvement of the adjacent pyramidal tracts gives rise to spastic phenomena; and invasion of the posterior columns is responsible for interruption of sensory impulses, tactile and muscular sensibility often escaping, while pain-sense and temperature-sense are usually impaired or lost. As stated, there is, however, no rigid invariability of the symptoms or in their distribution or extent.

An instructive case of vertebral injury, with involvement of the cervical cord, and presenting symptoms of syringomyelia, is reported by LLOYD in the Spring number of *Brain* for the present year, with some interesting reflections on the course of the sensory tracts in the cord. A laboring man, 60 years old, had, at the age of 30, received an injury to the dorsal and cervical spine by being jammed between two canal-boats, but recovery took place after five weeks' treatment. At the age of 57 years, the man was buried in a landslide for an hour; and on returning to consciousness after twenty-four hours, the *left* arm and leg were found paralyzed. Contractures subsequently developed. The muscles of the arm and shoulder were, besides, atrophied and the seat of fibrillary contractions. Clonus was marked in the fingers, wrist and ankle on both sides, and the phenomena of so-called spinal epilepsy were readily elicited in the legs. Appreciation of pain was lost on the entire *right* side of the body, excepting the face; temperature-sensibility in the *right* lower extremity and in a small area on the anterior aspect of the right side of the chest; and tactile sensibility in the *right* leg. An angular deformity involving the seventh cervical and the first and second dorsal vertebræ was visible, as well as a depression in the lumbar region.

Death resulted from some intercurrent affection five years after the second accident. On postmortem examination, in addition to evidences of extensive fracture of the cervical vertebræ, the dura was found adherent to the body of the sixth vertebra, while an angular deformity at the junction of the fourth and fifth vertebræ compressed the cord into a ribbon at the exits of the fifth, sixth and seventh cervical roots. At the level of the third and fourth roots the dura was twice as thick posteriorly as anteriorly. On histologic examination, the greatest destruction was found at the level of the seventh cervical verterbra and on the left side, including the pyramidal, cerebellar and antero-lateral ascending tracts, the anterior and posterior horns, the anterior portion of the posterior columns and the gray and white commissures. The destruction extended across to the right side of the cord along the commissure, but in its greatest intensity did not reach the horns of the right side. There was, however, some diffuse degeneration of slight degree in the antero-lateral column of the right half of the cord, and the anterior and posterior horns were misshapen and slightly degenerated. Ascending degeneration of the left cerebellar and antero-lateral tracts could be traced to the medulla oblongata, and two well-defined streaks of degeneration in the posterior columns, the one extending from near the gray commissure backward through the postero-external column, and the other from a point in the postero-internal column at the posterior longitudinal fissure backward and outward, but not to the periphery of the cord, could be traced to the level of the pyramidal decussation. There was marked descending degeneration of the left lateral pyramidal tract throughout the cord, slight degeneration of the right pyramidal tract, slight diffuse degeneration in the posterior columns, and degeneration

in the comma-zones for a short distance downward.

It is pointed out that while no cavity had formed in the cord, the seat of the lesion, particularly in its distribution about the central canal and the central gray matter, corresponded with that observed in many cases of syringomyelia. The segmental loss of tactile sensibility confined to the right leg is considered possibly hysteric, from the absence at and above the seat of lesion of any serious involvement (such slight implication as existed being symmetric) of the postero-internal columns, through which the sensory fibers from the lower limbs pass. PRINCE, in the article on syringomyelia, in DERCUM'S "Text-book on Nervous Diseases" (p. 590), cites BRUHL and CHARCOT as authority for the statement that "the loss of sensation in the arms occurs in zones, extending in a circular manner around the limbs, as in hysteria, and does not follow the anatomic distribution of the nerves in neuritis. This zone-configuration is thought to correspond with the arrangement of the spinal centers."

The thermanesthesia and the analgesia in this case are considered as pointing unerringly to the conclusion of VAN GEHUCHTEN, that in all probability pain-sense and thermic sense are transmitted through the gray matter by way of cells whose axis-cylinders become the fibers that constitute especially the antero-lateral ascending tract; and these fibers are, according to the same authority, crossed. The fibers for tactile sensibility are believed, on the contrary, to pass up the posterior columns on the same side.

USE AND ABUSE OF COCAIN.

When we reflect upon the almost universal use of this drug in medical and surgical practice it is difficult to understand that but fifteen years have elapsed since its introduction to the medical world. Even at that time it was thought by those acquainted with its uses that a new era had been opened, particularly in the realm of minor surgery, but probably its most sanguine adherents little reckoned that in so short a time it would become so well known as to escape the bounds of professional watchfulness. Its advantages in small and short surgical operations, where without its use general anesthesia would become almost imperative, has been exemplified times without number. The injection of a 0.5 per cent. solution into the deeper layers of the skin along a proposed line of incision will make that incision practically painless, and abdominal sections have been performed under this local anesthesia alone.

By its invaluable aid wonders have been accomplished in ophthalmic surgery. Previous to the introduction of cocain, when a cataract operation must perforce be performed under a general anesthesia, the operators were not at all sure but that they would find the vitreous upon the primary dressing, forced out of the wound by the retching and vomiting efforts so frequently happening after the administration of an anesthetic; or perhaps the violence of these efforts exciting a hemorrhage into the vitreous, in either case interfering absolutely with the success of the operation.

In nose and throat practice, cocain finds its most frequent use, and we might add, abuse. Not only are the various operations along these passages facilitated by anesthetizing the mucous membranes with solutions of this drug, but other important purposes are also well served; we are able to tell if a turbinate body is congested or whether the chronic congestion has led to true fibroid hypertrophy, by noting whether or not a weak solution is able to materially reduce the size of one of these bodies; if so congestion is principally to blame, and vice versa. Suppose that we are dealing with a patient with congested turbinates, and a cocain solution is applied; contraction in these erectile tissues soon follows, and the rhinologist is then vastly better able to discover other pathologic lesions that may be situated posteriorly, while operative procedures are far more easily performed by thus enlarging the field of vision. Again, when caustic drugs, either in strong solution or in pure form, are to be applied, it is the part of humanity to relieve the patient of all possible suffering in so far as it is not inconsistent with his safety.

In acute rhinitis, by contracting the vessels of the nasal mucous membrane, the turbinate bodies are reduced in size, the nasal cavity is freely opened, and the patient much relieved; but with the wearing off of the beneficial effect of the cocain, which unfortunately takes place very quickly, the vessels become more congested and tortuous than before, and the condition is aggravated. Resort is again made to the spray, and the same farce, or rather tragedy, is again enacted.

Before we had any realization of the hidden dangers of the drug, slaves to cocain were detected in all parts of the world where this terrible servant had been introduced. The servant had again become the master and a master that demanded the very lives, by inches, of his slaves. Even in comparison with morphinism but a small proportion of cocain habitués are ever able to throw off the shackles of their tyrant, and the results of the latter drug are even more deleterious and deadly than the former. It is to be deplored that so many of our profession have yielded to its devastating influence, and all the more so that anyone, professionally or otherwise, is so easily able to replenish his supply at the nearest drug store without prescription.

Unfortunately, in the early stages of the habit, the mental faculties as a rule are greatly benefited, and more head-work, if it may be so termed, can be performed. Cases without number have been reported of this influence among professional men, physicians, lawyers and even ministers. We all remember how Dr. CONAN DOYLE makes his great hero, Sherlock

Holmes, perform his feats of reasoning only after the instillation of a few grains of cocain into his veins. As in the morphin and chloral habits, it takes progressively increasing doses of cocain to satisfy the craving, and cases of taking as high as sixty grains in twenty-four hours have been reported. Later the drug exerts a degenerative action on the nervous system, and the will-power is completely lost. Upon the other tissues the condition becomes similar to that which in children we have been pleased to term marasmus. As regards the histologic effect upon the various organs, many experiments have been made upon the lower animals, and we have reason to believe that similar changes take place in man. In the brain and cord there is usually a well-developed hyperemia. On microscopic examination there are found degenerative changes in the large ganglionic cells of the cord and in other large collections of these cells in various parts of the body, particularly the cardiac ganglia. SCHEPPEGRELL, who has looked into the subject rather closely, makes the following statement: "In chronic poisoning the degenerative processes are found to have advanced farther in the cells of the spinal cord and medulla, minute cavities, atrophy and hyaline degeneration of the muscular tissues; in the nerve ganglia there is fatty degeneration, minute cavities and simple atrophy; in the liver atrophy of the hepatic cells is present. The vascular system is most affected in the spinal cord, there being cellular proliferation and hyaline degeneration of the coats. In the heart and liver an atrophic condition of the tissue is found, also a swelling of the endothelium of the capillaries of the cardiac ganglia."

Acute cases of poisoning are by no means uncommon, as every rhinologist will testify. Especially are the symptoms liable to follow the spraying of the nose with the usual strength used, 5 per cent., as a preliminary to examination and treatment. The nasal mucous membrane having a greater absorbing power than that of the mouth and pharynx, toxic symptoms are more apt to follow applications to the former. In mild cases of poisoning, the pupils dilate, the pulse becomes slow, the skin exhibits a marked pallor, the patient is often loud and boisterous in his conversation; in more pronounced cases, the face becomes cyanosed, the pulse rapid and thready, and syncope may supervene. Finally coma, with stertorous respiration and abolition of the reflexes may come on with the most startling rapidity, followed closely by dissolution. The amount of the drug appears to have little influence in the production of mild or grave symptoms, idiosyncrasy here being of the greatest importance. The time elapsing between the application of the solution and the establishment of toxic symptoms also varies within wide limits.

One word as to the substitution of drug habits. Attempts have frequently been made to cure morphinism by the use of cocain, and vice versa, this either on the advice of physicians or the victim attempting to take the cure into his own hands. This is not to be countenanced for a moment, in that the habitué becomes a slave to both, and the breaking down of his nervous system occurs even more rapidly than before. Many persons become victims through the pernicious habit of taking snuff. Probably all preparations of this contain cocain in larger or smaller quantities, and the physician may often be put upon the right track by obtaining the history of such a habit.

SCHEPPEGRELL, through his residence in New Orleans, has been enabled to add to the literature a peculiar phase of the cocain habit. He states that among the southern negroes, not a few of them draw up crystals of some salt of cocain into the nose. The object of this is not to obtain a free breathing space, but on account of the exhilaration a small quantity produces when taken in this manner.

Lastly, we must remember the many blessings that the proper use of cocain has bestowed upon mankind, at the time not forgetting that we are dealing with a two-edged sword. We should never put the drug into the hands of the patient himself. We should endeavor to find some means of preventing its dispensation by druggists without a prescription by a qualified physician. We should not in our private offices be too prone to apply it indiscriminately to all cases where a little suffering is to be borne. When it does become necessary to resort to its use in private practice, we should not allow our patient to know what drug is being used. With these retrictions, cocain has the greatest power to yield good results, and may in time become an unmixed blessing and regain the place in the profession that of late years it seems to have lost.

ALCOHOLISM IN FRANCE.

Mr. ARCHDALL REID, in a publication of his which has been recently widely quoted, considers alcohol as working out a benefit to the race by exerting a selective action on degeneracy, and thus in time producing a racial immunity to its own effects. There may be a grain of truth in this opinion, but in some respects it is open to question, and it does not so fully justify the conclusion obviously deduced by many, and apparently so intended by the author, that it is rather a good thing than otherwise for the race. If it acts in this way, so, it may be said, do tuberculosis, syphilis and other pests of civilization, which also cull out the physically and otherwise defective, and to the extent that they leave only the more resistant and prudent, may be said to improve the race average, and also to develop in time a certain degree of immunity to their attacks. That alcohol can be said to really act in a similarly remotely beneficial way, while directly and immediately disastrous in its effects, is far from being an established truth, either sociologically or physiologically, and as an abstract truth it is still more open

to dispute. We may speak approvingly of the fool killer as serving a useful purpose, but he becomes a very serious functionary if the general population, as a distinguished Briton once said of his countrymen, are mostly fools.

It is of interest in this connection to note the spread of the agitation against alcohol in countries, where, if a real immunity could be produced by long-continued usage, it ought now to exist. In our own country and in Great Britain the question is comparatively an old one, and there is little doubt that the conditions here and there are better in this regard than they formerly were. Most people, however, would be inclined, from a survey of the facts, to attribute whatever good has resulted rather to a public sentiment in favor of temperance that has grown up during the last fifty or sixty years than to any immunity derived indirectly through the vices of ancestors. In continental Europe, the general interest in the medical and sociologic aspects of the alcohol question, judging from the active public efforts in this direction, is of more recent date, but it seems to be increasing, and may be taken, in some measure, as an index of the greater spread of the evils of alcoholic excess. In France, a country that should show an immunity if any can, the conditions appear to be serious enough and to amply justify apprehensions of national disaster from alcoholic degeneracy. According to a recent paper by Prof. M. DEBOVE in the *Presse Médicale* of November 16, the consumption of alcoholic drinks, calculated in figures of absolute alcohol (100 per cent.), is at present 14 liters per inhabitant, as compared with 10.5 liters in Germany, 9.25 in Great Britain and 6.10 in the United States. If distilled liquors only are included, as in a recent thesis by M. RUYSSEN, quoted by DEBOVE, the amount is 4.54 liters per head as compared with 2.85 liters in this country. The figures he gives are the more significant when comparisons of recent and former years are offered, and we see that the consumption of alcohol in distilled spirits per head has risen in France from 1.1 liter in 1830, and has decreased in this country from 5.75 liters in 1860 to the present figure of 2.85. France, a country where alcohol in the form of wines and other fermented liquors has been almost universal and which ought reasonably to have thus acquired an immunity, if such were possible, has taken more and more to stronger drinks till it now leads the list, while this country, which a few decades ago had a still higher ratio, has fallen back in their usage to nearly the lowest figure, and is well down toward the minimum in the usage of all forms of alcohol-containing beverages. The number of cabarets in France has increased from 281,000 in 1830 to 500,000 in 1897, and indeed in some departments there appears to be one dramshop to every twenty or thirty adult inhabitants. New York and Chicago, with their numerous enough saloons, appear very moderately equipped in this regard when compared to Paris with its 33,000 cabarets, or one on an average to every three or four houses. M. DEBOVE sarcastically says, in view of the rapid spread of these establishments, that he does not despair of yet seeing street-cars turned into ambulant saloons and thus spreading throughout Paris the benefits of alcoholism.

It would seem that there might be some error in Professor DEBOVE'S figures; they certainly appear extreme, but we have no means of contradicting them. If correct, the economic aspects of this overgrown industry, if such it can be styled, ought to stir up French statesmen and legislators. France certainly appears to be well in the way of obtaining all the "benefits of alcoholism" to the full satisfaction of ARCHDALL REID and others of his class who can discover these beneficial effects.

While France seems to be in the lead in this regard, other European countries are also advancing in the same line. Belgium appears to be one of these, and some years ago similar complaints were uttered by a distinguished Austrian alienist in regard to the spread of the use of stronger alcoholics in southern Europe. The anti-alcohol congresses that have been held within the last few years and have been attended by some of the highest medical authorities, are a sign of the times that the need of some check is needed for the increasing alcoholic consumption. The movers in this work are not fanatical prohibitionists or even, as a rule, advocates of total abstinence at the present time—they are chiefly scientific medical men who can see the evils they wish to check. In a country like France, that seems just now, to use a colloquialism, to be going the full pace, there is certainly room for their best efforts.

THE ARMY MEDICAL DEPARTMENT OF THE FUTURE.

Under the above caption, in our issue of December 3 last, we suggested the likelihood of a large increase of the personnel of the Medical Department of the Army in the immediate future. We considered that for the Regular Army required by the United States, the present strength of the Medical Department, 192 officers, would have to be increased to at least 450 by the appointment of 258 medical men to fill original vacancies. This we regarded as the very minimum of needful expansion. Since then, three bills providing for the reorganization of the army have been introduced into the Congress of the United States. The precise wording of these bills is given in another column. It suffices for our present purpose to say that one provides for an increase of 404 medical officers, and each of the others for an increase of 309, making the total of the one 598, and of the others 501. It is evident that some action will be taken by Congress to increase and reorganize the regular army, so that the volunteer troops may be relieved from service and returned to their homes; and it seems probable that

this action will involve a large addition to the present medical force. This is the point which we desire to bring to the notice of the younger members of the Association, that those of them who have military aspirations may not be taken unawares by the announcement of the convention of an examining board to fill vacancies in the corps. Army medical appointments have been made by competitive examination since the days of the Revolution. In 1775 the Provincial Congress of Massachusetts Bay required each candidate for a position in the Medical Department to be subjected to a close examination by qualified medical men, and there was nothing *pro forma* in the work of that early board, for it is on record that eight out of fourteen candidates were rejected for failure to come up to the standard. The system then instituted has never ceased to be the rule. In the coming expansion of the corps, it is not likely that appointments will be made without this examination. In fact, all the bills now before Congress provide for the examinations now required by law.

No action will probably be taken by the Surgeon-General of the Army looking to the selection of the best men for the new position until these positions have an actual existence by legislation; but medical men desirous of filling them may do much in the way of special preparation to meet examining boards, if they recognize the likelihood of the speedy appointment of such boards. We know from the "Circular of Information for Candidates seeking Appointment in the Medical Corps of the United States Army," that applications for permission to appear for examination are in order at all times. This circular, issued from time to time by the Surgeon-General of the Army, gives the Constitution of the Medical Department at the date of its issue, and states the pay and emoluments and the duties and privileges of army medical officers, the method of making application and the manner and scope of the examination to which candidates are subjected, illustrating the general character of the latter by a series of questions on the various subjects taken from the records of a recently convened board.

At this present writing, the Chairman of the Military Committee of the House of Representatives is reported as having stated his belief that a bill reorganizing the army will be passed at a very early date. Our young friends should be prepared for prompt action by the Surgeon-General of the Army on the passage of this bill.

CORRESPONDENCE.

Stammering.

CORTLAND, N. Y., Dec. 13, 1898.

To the Editor:—In a late number of the JOURNAL there was a note as to the cause of stammering that startled those of your readers who heard the after-dinner speech of Mr. Henry Guy Carleton. To see the rich jokes of this excruciatingly funny stammerer presented as an item of medical interest is too much. But when we see it this week copied into the *Philadelphia Medical Journal*, sandwiched in between articles on the pure flour law and under-average life risks, the matter becomes serious. Would it not be well to mention that his comma bacillus of stammering is not to be taken so seriously as it reads? Yours respectfully, F. W. HIGGINS, M.D.

ASSOCIATION NEWS.

Section on Laryngology and Otology.—The program for the Section of Laryngology and Otology has been filled, and no more papers can be accepted for the Columbus meeting in June, 1899.

BOOK NOTICES.

Physician's Visiting List for 1899. Philadelphia: P. Blakiston's Sons & Co. 1998. Leather cover, $1; plain binding, $0.75.

This is the forty-eighth year of the publication of this handy visiting list, which will be useful to any physician. In contains, besides the blank leaves, a calendar, tables of signs, weights and measures, dose table and a "new complete table for calculating the period of utero-gestation."

Medical Record Visiting List for 1899. New revised edition. Leather. New York: Wm. Wood & Co. 1898.

In this edition the matter useful in emergencies has been increased, an important change being "in the list of both apothecaries' and decimal systems, and the indication of such as are official." There are also the uses tables concerning matters the physician often wishes to refer to, as weights, measures, solutions, etc.

PUBLIC HEALTH.

Technic Instruction for Religious Orders.—The recent French Catholic Medical Congress passed resolutions urging the training of all sisters of charity in the professional care of the sick and the instruction of the students in seminaries and theologic colleges, in practical hygiene, by a physician.—*Jour. des Sci. Méd. de Lille*, November 26.

Influenzal Prevalence.—A mild form of la grippe has been reported by many physicians of New York City and vicinity, a few cases having appeared as early as the middle of November. A large proportion of the cases have taken on the form of an acute coryza with soreness of the throat. The attack almost invariably begins with a chill, and headache and pains in the limbs.

New York State Pathologic Laboratory.—The ninth annual report of the New York State Commission in Lunacy, just issued, contains a full report on the methods and principles underlying the pathologic work of the State hospitals in the central laboratory in New York City. According to the *Charities Review*, November, this report "should receive careful consideration, for it not only develops methods of investigation, but presents a new view of the pathology on insanity, which by common admission is less perfectly understood than any form of disease afflicting the human race; and, if any hope of alleviating this curse is held out, in a better understanding of its nature and prevention, no possible means should be withheld, or no lack of encouragement toward its thorough investigation." Dr. Van Gieson, the director of the institute, is clear and explicit in his demonstrations and deductions, and can not well be misunderstood.—*Medical News.*

Scallops in Sewage Waters.—According to the *Medical News* for December 3, Fairhaven, Conn., has a large industry in shellfish which is being injured by sewage pollution. So large have become the quantities of factory refuse and sewage that pour

into the docks that pleasure boats no longer anchor at that point. When the New York Yacht Club gave this as a reason for omitting its annual visits it was laughed at, but now the citizens appreciate that the yacht owners discovered a condition which is becoming serious. When the Vineyard steamers went out this summer there was a trail of stench in their wake as they stirred the water with their paddles, which demonstrated how polluted the river is with filth. Business at the Fairhaven bath-houses has fallen off, for it is only at high tide, and often not then, that the water is sufficiently clear to tempt a bather. Scallops taken in the upper harbor have caused fever among those who have eaten them, and physicians have declared that the shell-fish which live in the mud on the shore are dangerous to eat on account of the sewage. Many are agreed that there are things more serious than high taxes, and a menace to the health of the community is not to be lightly regarded.

Epileptic Colony in New Jersey.—Under an enactment passed in 1898, an "epileptic village" is about to be inaugurated in the southern part of New Jersey. The act defines that this colony shall be governed by six managers, constituting a non-partisan board, having a three-year tenure. This board is instructed to select a suitably-located site, provided the cost of the same with the buildings on it shall not exceed $15,000. The law further requires that all plans for improvements to the property shall be submitted to and approved by the governor of the State. It is understood that a suitable site, consisting of about two hundred acres of land in the central part of the State, near Princeton, has been secured, that there are some good houses on the place, and that it is the intention of the managers to get enough of these buildings in condition to receive about twenty patients during the present year. Patients are admitted on a certificate signed by at least two freeholders of the town or township in which the applicant resides, which certificate must be attested before a magistrate. Freeholders in New Jersey exercise about the same powers and duties relative to charitable work as is exercised by superintendents and overseers of the poor in New York. The certificate made by the freeholders must also be certified to under oath by at two physicians, who must set forth the fact that the patient is an epileptic.—*Charities Review*, December.

Diet for Laboring Men.—Secretary Wilson of the Agricultural Department has been engaged in an investigation for the purpose of throwing light upon the most suitable varieties of food for laborers, mechanics and others whose daily work involves the expenditure of great muscular efforts. His agents in this research have studied the dietary of athletes and others, the amount and variety of whose food was measured and regular. Extensive examinations have been made on farms, in the shops and the factories, but the results there were not so satisfactory as at Yale, Harvard and other places, where better facilities were afforded for making tests. Agents of the Department were present at both New Haven and Cambridge while the crews of those universities were in training for their big rowing match last spring, and kept accounts of the amount and variety of food furnished to the men. There is no absolute rule as to the diet of the athletes, and trainers of men preparing for feats of strength and endurance have widely varying ideas on this subject. Investigations are to be carried on in other lines, with the idea in view of finding out what foods are the most nutritive for hard-working men. Experiments with bread and cereals have been carried on at the University of Maine, and at the University of Tennessee digestive experiments were made on the students. Interest in the nutrition investigations being made by the Agricultural Department is spreading all over the country. Secretary Wilson states that among the gratifying evidences of this fact is the recent appointment of one of his agents as a consulting expert to the Lunacy Commission of the State of New York on the food and diet of the insane. In connection with its other duties this commission is charged with prescribing the diet for the inmates of the asylums for the insane throughout the State. The Department of Health of the City of New York is arranging to issue circulars of practical information regarding the nutritive value and preparation of foods for general distribution in that city.

Kings County Hospital, New York.—This important institution, located at Flatbush, Long Island, is the subject of a special official report by Commissioner T. G. Bergen. This hospital for the poor of Kings county has in former years been the scene of disgraceful overcrowding and other scandal, growing out of years of political jobbery. Under the management of Dr. J. T. Duryea, medical superintendent for the past two years, important improvements have taken place, not only in the appearance, but in the accommodations of the place. Not only have all the wards been renovated and better furnished and supplied and the operating-room established, but a special home and rooms for trained nurses are already furnished, as well as a house for the resident physician and special rooms for the members of the medical staff. At the present time the presence of the professional nurses in their uniforms, with junior nurses or pupils aiding them and learning their profession, the improved condition of the quarters for the medical staff, and the opportunities furnished for instruction to medical men, graduates of medical schools, are a mark of an up-to-date system. For the first time in its history this hospital is now making a return to the medical world for the benefit of science and, therefore, for the good of humanity, for all the sums which in recent years have been spent unscientifically upon its wretched maintenance. It is proposed, with the additional sum of $100,000, granted by the Board of Estimate of 1898, to furnish additional wings to the main building for the accommodation of two hundred or more patients, for a better home and resting-place for all the nurses, away from their patients when off duty, and possibly for better accommodations for the idiots and feeble-minded and for convalescents, and also to create an amphitheater for the purpose of clinical instruction. In this way this hospital may yet become a credit to the people and a blessing to the sick poor of the Brooklyn Borough. Nearly 680 patients are now under treatment at this hospital, very many of these afflicted with diseases which prevented their admission into other hospitals of the city.

SOCIETY NEWS.

Washington Microscopical Society.—At the regular meeting of the Washington Microscopical Society, held December 13, a joint paper was read by Drs. George T. Howland and Henry A. Robbins, entitled "The Gonococcus Neisser," and the different methods of staining.

Cincinnati Society for Original Research.—At the regular meeting, December 8, the following program was given: Dr. Satterler, "Anatomic Basis of Temporal Neuralgia;' Professor Edwards, "Plans of the Biologic Laboratory of Cunningham Hall;" election of Officers.

Association of the French Medical Press.—An international congress of the medical press is being discussed by this Association, and efforts are under way to have it organized as a special Section of the International Medical Congress of 1900. If not found feasible, it is proposed to hold it as an autonomous congress. A congress of medical deontology is also under discussion, and the organization of a medical club in Paris.—*Presse Méd.*, November 12.

Northwestern Ohio Medical Association.—The fifty-fourth meeting held at Lima, Ohio, December 8 and 9, 1898, was the largest

and one of the most interesting meetings of the association. Twenty new members were admitted and 122 applications for membership received. The next meeting will be at Findlay, Ohio, in December 1899. The following are officers: R. E. Jones, Gower, president; W. K. Dickey, Toledo, first vice-president; B. S. Leonard, West Liberty, second vice-president; J. P. Baker, Findlay, secretary; T. M. Gehrett, Deshler, assistant secretary and treasurer.

American Physiological Society.—According to *Science*, November 4, a meeting of the American Society of Naturalists will be held in New York, December 28 to 30, at which arrangements will be made for sessions of a number of affiliated scientific organizations. Among these, it may be stated that the American Physiological Society and the American Psychological Association will meet on Wednesday, Thursday and Friday, and probably the same days will be chosen for the American Morphological Society, the Society for Plant Morphology and Physiology, and the Association of American Anatomists. The Section of Anthropology of the American Association will meet on Tuesday, followed on Wednesday by the American Folk-Lore Society.

Washington Chemical Society.—At the recent meeting of the Washington section of the American Chemical Society, held at the Cosmos Club, Dr. E. A. DeSchweinetz of the Columbian Medical School, read a paper on the "Estimation of Nicotin," and reported his past investigations and experiments with the curative serum for hog cholera. He also exhibited liquid air, which he served with a ladle and demonstrated its wonderful and interesting properties.

Society of Ophthalmologists and Otologists.—The November meeting of the Society of Washington Ophthalmologists and Otologists was held at the residence of Dr. J. H. Bryan, Dr. Swan M. Burnette, president, in the chair. Dr. Bryan read a paper entitled "Chronic inflammation of the Middle Ear." He discussed, at some length, the differential diagnosis, and pointed out the particular class of cases which should and those which should not receive operative interference. Dr. Suter read a paper on the "Twisting Power of Cylindric Lenses." An interesting discussion followed both subjects, and was participated in by Drs. Burnette, Wells, Richardson, Muncaster and Belt.

Philadelphia County Medical Society.—At the last stated meeting of the Philadelphia County Medical Society, Dr. Lawrence Flick read a paper on the subject of "Contagion; Its Meaning and Sanitation." In the paper the speaker first introduced the philology of the word "contagion," after which he cited the definition as expressed by different medical writers. Speaking further on the subject, Dr. Flick thought that the word "contagion" should include the word "infectious." Drs. A. A. Eshner and Solis Cohen both dissented from the view as expressed by Dr. Flick, and held to the opinion that the word "contagion" should be used in rather the restrictive sense, while the word "infectious" should be used more broadly and include the word "contagion." Dr. H. Ferree Witmer presented an unusual case of aphasia affecting a lad about 15 years of age. Suitable charts and diagrams were also exhibited to show the locality of the lesion. Dr. A. J. Downes read a paper on the "Bottini Operation for Enlargement of Prostate Gland," and exhibited the instruments and battery necessary to complete the operation. A case in which an aged person had been treated for this affliction with distressing symptoms, at the hands of the speaker, had shown a wonderful improvement. Only five minutes are consumed in the operation, which seemed relatively free from danger.

International Congress of 1900.—Dr. Lannelongue, chairman of the Organizing Committee of this medical congress, has announced that the time for holding the sessions has been fixed for Aug. 2 to 9, 1900. The entrance fee, amounting to 25 francs, can either be sent to the general manager at Paris or to the committees who are acting in foreign countries. Every subscriber will receive a document showing the extent and arrangement of the Section in which he is interested. The congress is divided into five Sections: 1. Biology: *a*, anatomy, descriptive and comparative; *b*, histology, embryology, teratology; *c*, physiology, physical and biologic chemistry; and *d*, anthropology. 2. Medicine: *a*, general and experimental pathology; *b*, bacteriology and parasitology; *c*, pathologic anatomy; *d*, visceral pathology; *e*, medical diseases of children; *f*, therapeutics and pharmacology; *g*, nervous diseases; *h*, mental diseases; and *i*, dermatology and syphilology. 3. Surgery: *a*, general surgery; *b*, surgical diseases of children; *c*, surgery of the urinary organs; *d*, ophthalmology; *e*, laryngology and rhinology; and *f*, otology. 4. Obstetrics and gynecology. 5. State Medicine: *a*, hygiene, sanitary medicine and epidemiology; *b*, forensic medicine; and *c*, military medicine and surgery, naval medicine and surgery, and colonial medicine. Two general meetings will be held; one on the opening day and the other at the end. Only those members nominated and invited by the Committee will be able to read papers. All proposals relative to the work of the congress must be handed in to the Committee before May 1, 1900.—London *Lancet*, November 26.

Washington Obstetrical and Gynecological Society.—The two hundred and eighty-ninth meeting of the society was held December 2, at the residence of Dr. Joseph Taber Johnson. Dr. Bovee presented two Fallopian tubes which he had removed. In either tube hematosalpynx and pyosalpynx was found, the blood tumor occupying the tubes nearest the uterus, while the pus cavity occupied the fimbriated portion. Dr. J. T. Johnson presented two large, fibroid uteri, which he had recently removed. The first was removed from a white woman, aged 58 years, who gave the following history: Eight years ago she consulted Dr. Murphy at Columbia Hospital, and he performed an abdominal section but declined to remove the tumor, on the ground that it was not a suitable case for operation. She applied to Dr. Johnson at the Georgetown University Hospital two weeks ago, who successfully removed the growth. The growth presented a large polypus in the interior of the uterus. The second was removed from a white woman, aged 38 years. This was a large, pedunculated fibroid which grew in the broad ligament. As the uterus was found to be diseased, that was also removed. Both patients made an excellent recovery. The paper of the evening was read by Dr. Samuel S. Adams, on the diagnosis of tubercular meningitis in infants. Dr. Adams discussed particularly the question of diagnosis and pathology. He gave the history of three interesting cases, which he had recently seen in consultation with other members of the society. The patients died, and he regretted that no postmortem was permitted. The discussion was opened by Dr. E. E. Morse, and further participated in by Drs. Adams, Smith, H. L. E. Johnson, Winter, Cook and Acker. Dr. D. W. Prentiss gave the history of a case of syphilitic fever. No history of specific character could be obtained in the beginning of the attack. The patient had chills and fever daily. Finally, a suspicious sore throat suggested syphilis. Iodid of potash and protiodid of mercury promptly cured. The chart showed daily fever, often high, of a typic, regular character, but no corresponding increase of pulse.

Washington Medical Society.—At the meeting of the society held November 30, Dr. Wliliam C. Woodward read a resolution of regret on the death of Dr. Charles M. Hammett, which was formally adopted. Dr. Dallas Bache, U. S. A., and Dr. Wm. H. Gardiner were elected members by invitation. Dr. Mauss presented a case of calculus pyelonephritis and calculi in the gall-bladder, with intermittent fever. The patient had been a sufferer for many years and at one time was supposed to have been suffering from peritonitis, and on another occasion was supposed to be in labor. Repeated urinary examinations showed negative results. Operated on for ovarian disease, the tubes and ovaries were removed. The patient had four attacks of renal colic and subsequently pus was found in the urine. Postmortem showed a large calculus in the left kidney and three calculi in the gall-bladder. Dr. Glazebrook presented two kidneys and gave following history: The patient, aged 41 years, suffered from inguinal hernia, urethritis, stricture and rupture of the urethra; urethra sacral fistula, cystitis, retention and calculus. The stone was crushed and removed per urethra. Postmortem showed the left kidney weighed one ounce; urethra fibrans. Right kidney weighed fifteen and one half ounces. The ureter contained a large calculus and was distended from that point to the kidney. Section of the kidney showed sloughing and infarctions. Dr. W. W. Johnston read a paper on the differential diagnosis of disease characterized by regular intermittent fever. He said, that as a rule disease accompanied with chill, fever and sweating is usually assumed to be malarial, in a malarial region. The following of such a rule is often the source of error. He mentioned the following fevers which presented similar symptoms: malaria, hepatic, ulcerative endocarditis, vegetative endocarditis, rheumatic, acute tuberculosis and syphilitic. In malarial, the fever begins with chill, and the temperature is at its

height in four or five hours, followed by sudden sweat; secretion of urea is increased. Where the initial attack or the three stages continue for less than ten or more than twelve hours, diagnosis is doubtful. The spleen is usually enlarged and the skin sallow. Finding the presence of the plasmodium confirms the diagnosis. In hepatic fever there is suppuration or inflammation of the bile ducts; chill, no prodromes, irregular course; chill usually in afternoon or evening. Rise of temperature begins with chill. Sweating is least constant, usually short; urea decreased for two or three days between fever; no pain; no icterus; no physical signs, except biliverdin in the urine. Diagnosis is by exclusion and by sudden cessation. In endocarditis, one of the most characteristic symptoms is intermittent fever, chill at no fixed hour, highest evening temperature 102 degrees, followed by sweating; pulse rapid; exhaustion marked; interval of a day between fever; leucocytosis; organisms in blood; results fatal, embolic symptoms. In rheumatic fever there is chill every day, never exhausted, and stiff joints. In one case Dr. Osler noted the presence of small subcutaneous nodules on the legs. Salicylate of soda cures. Quinin is useless. In tuberculosis, fever is first intermittent, then remittent and finally intermittent; chill at midday; flushing of face; loss of flesh. In syphilitic fever, daily pain, daily fever, often high, but no corresponding increase of pulse; previous history.

At the meeting held December 14, the president, Dr. Samuel C. Busey read his annual address entitled "The History and Progress of Sanitation of the City of Washington and the Efforts of the Medical Profession in Relation Thereto." Dr. Busey described the original city as laid out, and referred to its hygienic and anti-hygienic features; the different watercourses and streams, swamps and lowlands; he referred to the gradual growth of the city and the different acts of Congress regulating its government; the introduction of Potomac water in 1859; the beginning of sewer construction in 1810; and described its evolution. He gave an interesting account of the first organized effort of sanitation, which occurred in 1819, in the appointment of a health officer, whose duty it was to report nuisances to the mayor; culminating in the present health laws of the District as aided and modified by the efforts of the Medical Society. He also referred to the evolution and growth of the city hospital system, and closed his remarks by showing the effect of sanitation in lessening the prevalence of contagious diseases and its influence particularly in lessening a number of cases of typhoid fever in the District.

NECROLOGY.

SAMUEL DECKER, M.D., College of Physicians and Surgeons, New York, 1867, of Griffin Corners, N. Y., died December 6, aged 59 years.

EDWARDS HALL, M.D., Albany, N. Y., 1844, died December 10, at his home in New York, where he was long and favorably known as a faithful family physician.

ALBIN J. FULDA, M.D., of New York, who had been in poor health for several years, died there December 9. He served during the Civil War as surgeon of the Forty-fifth New York Volunteer Infantry.

SOLOMON P. CAHEN, M.D., New York City, died of pneumonia, December 6. Born in Germany in 1895, he came to New York in 1860, returning to Germany in 1864, where he later was graduated in medicine from the University of Leipsic.

GEORGE W. BAKER, M.D., Brooklyn, N. Y,, died December 5. He was born in 1837, received the degree of M,D. from the College of Physicians and Surgeons, New York City. During the Civil War he enlisted in the medical corps, and was soon assigned to a hospital in Washington, where he served for three years.

L. CHAPMAN SMITH, M.D., New York University, 1878, died at his home in Brooklyn, N. Y., December 9. After receiving his dental diploma he began the study of medicine and after his graduation, took up the study of pharmacy. He was 45 years old and a member of the Kings County Medical Society. A wife and two daughters survive him.

GOUVERNEUR MATHER SMITH, M.D., College of Physicians and Surgeons, New York, 1855, died in that city December 8. He was a son of the late Prof. Joseph Mather Smith of the above college and inherited his literary as well as humanitarian impulses. His name was well known in hospital work and benevolent institutions. He was unmarried.

HENRY CAMPBELL DOUGHTY, M.D., Augusta, Ga., died at his home December 4, of consumption. He was demonstrator of anatomy in the Medical College of Georgia, and in addition to his work in surgery gave a great deal of attention to chemistry and bacteriology. He was but 26 years old.

NATHAN SHERWOOD KING, M.D., of Yonkers, N. Y., died at his home, December 11, of pneumonia. He was born in 1824 at Fishkill, and was graduated from Williams College in 1849 and from the College of Physicians and Surgeons three years later. He leaves a wife and one married daughter.

JOSEPH W. MARSEE, M.D., Indianapolis, Ind., Dean of the Indiana Medical College, died December 3, after an illness of two days, aged 50 years. His connection with the Indiana Medical College began twenty-three years ago, when he became demonstrator of anatomy, later succeeding to one of the chairs of surgery, and six years ago to the office of Dean.

J. G. CUNNINGHAM, M.D., Kittanning, Pa., died December 12. He was a member of the County, State and AMERICAN MEDICAL ASSOCIATION, and of the G. A. R. and Masonic bodies, and a graduate of Jefferson, class of 1867.

A. C. MORRIS CHESTON, M.D., West River, Md. December 1. . . . C. M. Deitrich, M.D., Galesburg, Mo., December 8 . . . Daniel Dupree, M.D., Dallas, Texas, November 25, aged 77 years . . . Thomas D. Wright, M.D., Preston, N. Y., aged 81 years . . . E. B. Fleece, M.D., Wildwood, Fla., November 30. . . . Hosea A. Hamilton, M.D., Oneonta, N. Y., December 6, aged 76 years . . . J. B. Hanaford, M.D., Apponaug, R. I., December 6, aged 59 years . . . George Z. Higgins, M.D., Strong, Maine, December 11, aged 66 years . . . J. W. Hill, M.D., Knoxville, Tenn., December 4 . . . Francis Johnson, M.D., Pawtucket, R. I., November 27, aged 65 years . . . L. Jones, M.D., New Middletown, Tenn., December 4 . . . L. L. Metzger, M.D., Brooklyn, N. Y., December 4, aged 35 years. . . . S. R. Millington, M.D., Poland, N. Y., November 28, aged 72 years . . . Henry Ostrom, M.D., Alton, N. Y., December 8, aged 73 years . . . John Parr, M.D., Buel, N. Y., December 7 . . . Martin Payne, M.D., Portland, Ore., December 2, aged 62 years . . . Albert J. Philips, M.D., Baltimore, Md., November 24, aged 44 years . . . D. T. Porter, M.D., Memphis, Tenn., December 2, aged 72 years . . . Leander Seaton, M.D., Stauffer, Pa., December 11, aged 40 years . . . John I. Sherwood, M.D., Covington, Tenn., December 2, aged 66 years. . . . Norman T. Shobe, M.D., Indianapolis, Ind., December 1, aged 22 years . . . William S. Stevens, M.D., Augusta, Ga., November 29 . . . E. M. Stillman, M.D., Andover, N. Y., December 6, aged 57 years . . . F. E. Strong, M.D., Lancaster, Wis., December 13, aged 40 years . . . S. C. Warner, M.D., Ceres, Va., December 5 . . . J. A. W. Wegeforth, M.D., El Paso, Texas, December 9, aged 35 years.

DEATHS ABROAD.

SIR WILLIAM JENNER, the distinguished pathologist and physician in ordinary to the Queen and the Prince of Wales, died December 12. He was born in 1815 and was educated at University College, London, in which institution he became professor of pathologic anatomy in 1848. He was president of the Royal College of Physicians from 1881 to 1889, when he retired from the practice of his profession. He was the first person to establish, beyond dispute, the difference between typhus and typhoid fevers. He was appointed physician extraordinary to the Queen on the death of Dr. Baly, in 1861, and the next year was gazetted physician in ordinary to Her Majesty, receiving the same preferment in 1863 in the household of the Prince of Wales. He attended the Prince Consort during his last illness. It was in recognition of his services during the severe illness of the Prince in 1871 that he was made Knight Commander of the Bath. He was created a baronet in 1868. He wrote numerous papers on fever, the acute specific diseases, diphtheria, diseases of children and diseases of the heart, lungs and skin. Among his published books are a treatise on diphtheria, and "The Identity or Non-Identity of Typhus or Typhoid Fevers."

H. A. PILLIET, M.D., Paris, aged 37 years. Seldom has so brief a career seen such an amount of scientific work accomplished. His constant co-operation on the staff of the *Progrès Médicale* and of the *Tribune Médicale*, and as professor in the training schools for nurses, did not interfere with his abstract scientific labors, studies of the liver in infective diseases, toxic gastritis, muscles of the bladder and uterus, etc. He prepared for any work of this kind on an organ by an exhaustive study of the normal organ in man and animals, before turning to the pathologic conditions.

MISCELLANY.

Betain Hydrochlorate vs. Tetanic Toxin.—Roger and Josué announce that one centigram of betain hydrochlorate will neutralize, completely, one drop of tetanus toxin in experiments on guinea-pigs, and merely diminish the effects of two drops of toxin, thus establishing the limits of its neutralizing action.—*Semaine Méd.*, November 30.

Protracted Grippe.—Tilaloff has observed several cases of grippe lasting several months. In three cases there was continuous slight fever for five months, and in two, intermittent relapses, transient, but occurring at intervals for several years. Change of climate is required for this chronic grippe.—*Presse Méd.*, November 26.

Edema of the Larynx.—The *Rev. Hebd. de Laryng.* for November 19 describes two cases of edema of the larynx, probably of angioneurotic origin, one due to the menopause, treated with leeches, sodium salicylate and sodium iodid, gradually diminishing during several months, till final recovery. The other commenced abruptly in a young man after a simple stroll on the seashore so violently that intubation was required at once. The patient was out of danger the same evening.

Ascending Neuritis.—Marinesco concludes a histologic study of this rare affection with the statement that the most frequent if not the only cause is a local affection. If there is much tendency to spread, the agents of the infection pass by means of the lymphatic spaces in the nerve to the spinal cord; that is, a spinal cord phase supplements the neuritic phase. The destruction of a certain number of nerve-fibers by the microbe and its toxins may affect the center even before the toxic substance has reached the spinal cord. If, on the other hand, the poison is very diffusible, the central lesions are marked before there are manifest lesions in the nerves, as happens with nicotin injected into a peripheral nerve.—*Presse Méd.*, November 23.

The Pancreas in Diabetes.—Lancereaux asserts that a certain form of diabetes, *diabète maigre*, is necessarily connected with every profound alteration of the gland, and that the other forms of diabetes may be due to a material disorder or merely a functional disturbance in the innervation. Glycosuric diabetes is therefore no longer a distinct disease, but, similarly to albuminuria in relation to the kidneys, is a syndrome subordinate to a material disturbance of the pancreas or to mere disturbance of the innervation.—*Bull. de l'Acad. de Méd.*, November 15.

Osteomalacia.—F. Schnell has observed thirty-two cases at Würzburg: one recovered spontaneously; sixteen received medical treatment alone and eleven surgical after the former had failed. He classifies them as progressive and tardy. The progressive form appears early and has no remissions. The tardy form was observed in multiparæ, with exacerbations during pregnancy and remissions in the intervals. Phosphorus and cod-liver oil proved the most effective medical treatment, diminishing the pain. Castration proved successful, not only at first, but in its permanent results. The ovaries in the fourteen cases examined were degenerated in proportion to the severity of the affection, the stroma transformed into fibrillary connective tissue, with a tendency to hyalin degeneration of the vascular apparatus.

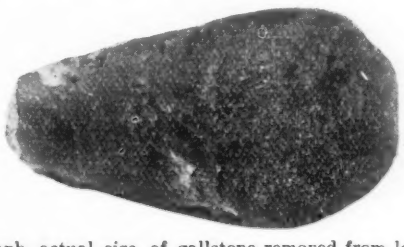
Carrion's Disease.—The October numbers of the *Crónica Médica* of Lima are devoted each year to a discussion of this disease, better known as Peruvian verruga and Oroya fever, and to a eulogy of the devoted young doctor, D. A. Carrion, who was making a comprehensive study of these supposedly separate endemic diseases, and become convinced of their identity. To demonstrate it he inoculated himself with blood from a patient with verruga at the Hospital 2 de Mayo, and died in a couple of months from the effects, with a typic case of Oroya fever (1885). His description of the particulars of the disease as it attacked him is one of the most exact and comprehensive studies of any disease extant.

Experimental Tuberculosis.—Richet states that dogs inoculated with pure cultures of the Koch bacillus were exposed to the vapors of turpentine for an hour every week during six months and the development of the infection was definitely arrested, while the control animals all died.—*Presse Méd.*, November 28.

Myositis Ossificans Progressiva.—Stempel has been studying, for three and a half years, a typic case commencing at four years of age. He concludes from his numerous microscopic investigations that the process is not due to the muscles or bones, but proceeds from the connective tissue, originating in some disturbance of the tissues in the embryonal period, producing defective differentiation of the original gelatinous tissue—representing the mesenchyma—which would develop normally into connective tissue on one hand and into bone and joint tissue on the other. If this normal differentiating process is disturbed, the places normally occupied by connective tissue are filled with bone and joint tissue. The coexistence of the other disturbances in development, absence of the terminal phalanges, etc., which generally occompany this affection are also explained by this theory.—*Cbl. f. Chir.*, November 19.

Intestinal Obstructions.—In a previous number of the JOURNAL (p. 966) in an article on "Intestinal Obstructions from Gallstones, with Report of a Case," by J. P. Lord, M.D., Omaha, Neb., an illustration which belonged to a paper appearing later in the JOURNAL was erroneously inserted, in place of the following:

Photographs, actual size, of gallstone, in half section, case of Jere Cooper, operated March 14, 1898, by Dr. Lord.



Photograph, actual size, of gallstone removed from lower ilium of Jere Cooper, by Dr. Lord, March 14, 1898.

Abdominal Fixation of the Uterus.—Henricius reports sixty cases operated on—15 retroflexion or retroversion; 39 prolapsus, or other causes. Three have borne healthy children at term (two operated for prolapsus and one for retroversion). In forty-eight cases, recovery was smooth; in 5 there was a fistula or hernia or both; in one, sepsis from the tube removed, in one case necrosis of the part, the abdominal wall probably too tightly compressed. In one case there was a slight phlebitis of the leg and in another an emphysema in the abdominal wall.

He has collected 122 cases in literature in which abortion followed in 14, premature natural delivery in 3, premature artificial delivery in 1. In 104 cases of delivery at term, there was breech presentation 6 times, shoulder 6, asynclitism of the head, 1; spontaneous delivery in 66 out of the 104; eclampsia in 2.—*Nordiskt. Med. Arkiv.*, xxxi, 5.

Rupture of the Umbilic Cord.—Tissier reported, at a recent meeting of the Paris Medicolegal Society, a case of delivery in a standing posture in which the weight of the child, 2670 grams, broke the cord horizontally across, the divided surfaces as smooth as if they had been cut with scissors. Other cases were related in which the weight of the child had caused the usual oblique rupture, and Charpentier mentioned a case in which a very heavy fetus was accidentally picked up by the cord and suspended a few moments without rupturing it.

Vitality of Severed Human Flaps.—Wentscher asserts that Reverdin's flaps can be kept three weeks without loss of vitality in a 6 to 10 per cent. salt solution, or dry in cotton, and then be successfully transplanted. A brief freezing does not injure them, but they are very sensitive to warmth, long application of disinfectants and much desiccation. The tissue should not be too dry to easily imbibe the protoplasma stream after transplantation.

Surgical Intervention on the Insane.—Picque of Paris, proposes to increase the discretionary powers of the curator or administrative committee in respect to operations deemed indispensable by the physicians of the asylum that has the insane patient in charge, adding to the present regulations: "The administrator may, in case of conflict with the family, order the application of treatments considered indispensable."—*Presse Méd.*, November 26.

Fundus Oculi Lesions: Correction.—In the report of the paper of Walter Hilliard, M.D., (vide JOURNAL, December 10, p. 1421), in the sentence: "Another feature of importance is the capillary network of the retina, which is the finest and closest in the body," the choroid is meant and not the retina.

Quinin in Malarial Fever.—Dr. Robert Koch having had the temerity to declare that the "black-water fever" of South Africa is really "quinin poisoning," has most effectually injured the reputation of quinin, at least in the minds of the laity in South African territory, and has thereby occasioned a heated discussion in British medical journals and societies. Dr. Koch's opinion is not accepted by the English physicians who are resident in South Africa, and they vehemently protest that it is superficial and fallacious, arguing with liberal references to long experiences, which show that black-water fever patients recover quickly if treated promptly with heroic doses of quinin—that, in the words of Dr. R. U. Moffat of Uganda *British Med. Jour.*, Sept. 24, 1898), "there is only one treatment for malaria: quinin, more quinin, and yet more quinin."—*Am. Therapist*, November.

Tachypodia or "Hot Foot."—The late Dr. Péan of Paris was once called in the capacity of a physician to attend a duel. One of the adversaries was so cowardly that he ran away after the first shot, unhurt. The four seconds, the remaining combatant, and the Doctor stood looking at each other with embarrassment and discomfiture, when Dr. Pean broke the silence by saying gravely, "I know the disease that has suddenly attacked this gentleman," and taking out his pencil and paper, he drew up a report as follows: "At the first shot, Mr. X. was taken with a sudden attack of tachypodia that would not not yield to treatment. The seconds, therefore, on consultation with the physician, stopped the duel."—*Medical News*, December 3.

The Pathologic in Goethe.—W. A. Freund contributes an article to the *Munich Med. Woch.* of November 29 that will create a sensation among the admirers of Goethe, as he states that the fact of the early death of his children and the degeneracy of those that survived, studied in connection with his own illness at one time, which after the most unfavorable prognosis, terminated unexpectedly in recovery in the course of a year, indicate a specific disease cured with specific treatment. The lesions mentioned in his letters, his reference to "Don Sassafras," and his later relapses support this view which Freund claims explains much of the medical, chemical and philosophic tendency of his writings.

The "Pugwash Plant" of the Indian Doctor.—The man who has worked the country long and successfully as an Indian doctor gives directions for the pursuit of this noble calling. Buy a job lot of senna and make it into senna tea, with a few other "yarbs." Bottle it and take it out on the road with a wagon. Name it "Yokotami, the Great Blood Purifier of the Pugwash Indians." Men will throng to the wagon to get it, and, going to the edge of the crowd, will take a furtive swig to see how much better they feel. They usually think they do, and after their bowels have moved the next morning they know they do.—*Popular Science News*, November.

Temperature on Determination of Sex.—Molliard stated, at the Paris Académie des Sciences, October 31, that a higher temperature favors the production of females (Düsing), and Schlecter arrives at the same conclusions in regard to horses. Von Siebold has shown that eggs of the nematus ventricosus produced more females as they were kept at a higher temperature, and Molliard confirms this fact in regard to the mercurialis. Knight, on the other hand, has noted that the watermelon raised in a hotbed, has only male flowers.—*Presse Méd.*, November 9.

Bequests.—The late David Leahy of Brooklyn left certain large sums to charitable institutions, of which the St. Mary's General Hospital of Brooklyn receives $10,000, the St. Mary's Maternity, $7,500, and the Home for Consumptives of Brooklyn, $5,000. Several homes for children, and other institutions, together with those named above, are to receive $100,000 in addition to which a residuary interest in over $200,000 is left to those charitable institutions and to the Catholic University and Yale College.

Dr. Jacobi Honored.—An anonymous donor has presented $50,000 for the endowment of a ward for children at the Roosevelt Hospital, New York, the ward to be used for the purposes of the clinical instruction of the students of the College of Physicians and Surgeons, and to be known as the Abram Jacobi ward for children. The trustees of Columbia are to have the right to nominate the persons giving instruction in this ward and that appointment has been conferred upon Dr. Abram Jacobi, Professor of Children's Diseases. One of the conditions of the gift was that the donor's name should not be made public. Only the students in their final year will be taught in the ward, which will be open to all children, except those having contagious diseases.

For Cuba Libre.—Dr. John Guiteras, Professor of Pathology in the University of Pennsylvania, will resign at the close of the present year to accept the chair of the Practice of Medicine at the University of Havana. Dr. Guiteras has been greatly interested in the liberation of Cuba and wishes to build up the medical courses in the University of Havana.

An Army Medical Examining Board.—The Army Medical Examining Board, which was convened in Washington, D. C., October 10, last, has concluded its present labors by filling the existing vacancies in the corps. The Board consisted of Colonel Dallas Bach, assistant surgeon-general; Major Louis A. La Garde, surgeon, and Captains G. E. Bushnell, G. [illegible] De Shon aud E. L. Munson, assistant-surgeons, United States Army. One hundred and seven candidates were invited to appear, but thirty-three failed to avail themselves of the oppo

tunity; twenty-nine were rejected on account of defective physique and twenty were passed as satisfactory in every respect. Among the successful candidates were Dr. Church, who, as assistant-surgeon of the Rough Riders, distinguished himself in the fight at Las Guasimas, June 25, 1898, and Dr. Ford, the assistant-surgeon of an immune regiment, who came all the way from Manzanillo, Cuba, to have his qualifications tested. The Board has adjourned subject to the call of its president. It has not been dissolved, and may have considerable work before it if Congress passes a bill for the reorganization and increase of the army.

Accident to Hospital Ship.—The *Bay State*, a hospital ship belonging to the U. S. Army, was the scene of an explosion of an ice making machine at Brooklyn on December 6. The expert engineer in charge of the machine lost his life, and twelve members of the hospital corps of the vessel were injured or temporarily in danger of asphyxiation. The injured men were treated successfully on board of the *Relief*, which chanced to be lying at an adjacent wharf. The *Bay State* was only slightly injured. She was formerly the property of the State of Massachusetts. At the close of the hostilities with Spain, she had been purchased by the Federal authorities and assigned to Chief Surgeon R. M. O'Reilly, whose future post of duty will be at Havana and in Cuban waters, referred to in another item.

Appointment as Contract Surgeon in the U. S. A.—The following requirements are exacted by the Board of Examiners: Evidence of graduation at a regular reputable medical college—diploma to be submitted to the Board. Proof of hospital or other professional experience will be of benefit to the candidate. Candidates must be in good health, of reasonably sound physique, and citizens of the United States. The examination is of a practical nature, embracing hygiene, practice of medicine, pathology and surgery. In addition, a thesis on some professional topic will be prepared by the candidate. The following questions submitted to former candidates are published as a guide to applicants: 1. What chemic and physical qualities of water would lead you to suspect its potability? 2. What are the varieties and pathology of felon? 3. What is Widal's test? 4. What are the modern methods of treating diphtheria? The pay of acting assistant surgeons is $150 monthly. The applicant must be free from physical defects which would incapacitate him from the military service. For further information address Major H. S. Kilbourne, Surgeon, U. S. A., Army Building, 39 Whitehall Street, New York City, President of Board of Examiners.

To Profit by British Experience.—Lieut.-Col. R. M. O'Reilly, chief surgeon, Havana, Cuba, has recently been ordered to proceed to Jamaica, with the view of gathering information concerning military sanitary methods in that island, which may be of use to us in our occupation of Cuba. Surgeon-General Sternberg gave him the following special instructions:

In compliance with instructions contained in a letter from the Adjutant-General of the Army, dated Dec. 2, 1898, you are expected to make a careful inquiry with reference to the methods now in use in the island of Jamaica for protecting soldiers of the British Army stationed upon that island, from fatal infectious diseases and from the deleterious effects of climatic influences. You should ascertain, as far as practicable, the results obtained by improved methods which have been adopted as the result of experience, and full details as regards the housing, clothing and feeding of British soldiers in semi-tropical and tropical climates; also the methods found most satisfactory for the disposal of excreta and for the protection of troops from infectious diseases, and especially yellow fever, dysentery, camp diarrhea and the malarial fevers. The measures of prophylaxis adopted, and the results of such measures should be fully investigated. Especial attention should be given to the question of rations and clothing which have been found suitable for the climate of Jamaica; also as to the construction of barracks found by experience to be most suitable and conducive to the health of the soldiers in garrison; also to everything pertaining to camp equipment and the sanitation of camps as practiced and as required by army regulations and orders. You are expected to make to the Adjutant General of the Army a full report upon these subjects.

Protection from Insects.—A memorandum from the office of the Surgeon-General of the Army, issued as far back as June 13, 1890, does not appear to have attracted the attention of medical journalists. We present it here as being of interest to others than those to whom it was first addressed:

The attention of medical officers of the regular and volunteer armies is invited to the following extracts from a letter addressed to the Surgeon-General by Prof. Stantord E. Chaillé of the Medical Department, Tulane University of Louisiana, New Orleans: "Instructions appear to have been issued to our soldiers for the preservation of health in the tropics, and I believe it well worth your consideration whether it would not be well to have disseminated among them information calculated to alleviate greatly their sufferings from mosquitoes, fleas and other insects, sufferings which often deprive soldiers of the sleep and rest which, with food, are the primary requisites for their efficiency. During the Civil War many soldiers blessed me for the following information: Mosquitoes, fleas, bedbugs and, I believe, insects generally detest and will avoid the essential oils and the plants which, with or without bruising, are strongly impregnated with their odor. In New Orleans, oil of lavender is used by many for relief from mosquitoes; a drop or two smeared on a hand or on any naked surface will protect until it dries up, say half an hour. While a Confederate surgeon I was in a town infected with fleas, and secured great relief by using freely in my boots and clothing and about my bed the bruised pennyroyal which grew abundantly within the town. Smearing exposed parts with grease will protect from mosquitoes until the grease disappears. A small piece, say one or two inches square, of fat middling or bacon to smear on exposed parts is more efficient than essential oils, because the grease does not dry up as soon, and would probably protect during the usual hours of sleep, if used at the beginning and repeated once during the night's rest."

Bills to Reorganize the Army.—Three bills "for the Reorganization of the Army of the United States and for other purposes" have been introduced into Congress. Each has been read twice and referred to the committee on military affairs. The following are the sections of each which relate to the medical department. It seems likely that the provisions in Senate Bill 4900 for so many assistant surgeons-general with the rank of major, captain, etc., are merely the result of clerical errors in copying the bill.

SENATE BILL 4900, introduced by Mr. Hawley. . . .

SEC. 15. That the Medical Department of the Army shall hereafter consist of 1 surgeon-general, with the rank of brigadier-general; 20 assistant surgeons-general, with the rank of colonel; 30 assistant surgeons-general, with the rank of lieutenant-colonel; 175 assistant surgeons-general, with the rank of major, and 120 assistant surgeons-general, with the rank of captain, mounted, and 250 assistant surgeons-general with the rank of lieutenant, mounted. The enlisted force of the medical corps shall consist of 250 hospital stewards, 250 acting hospital stewards and 2000 privates.

SENATE BILL 4938, also introduced by Mr. Hawley. . . .

SEC. 11. That the Medical Department shall consist of 1 surgeon-general, with the rank of brigadier-general; 20 surgeons, with the rank of colonel; 30 surgeons with the rank of lieutenant colonel; 100 surgeons. with the rank of major; 350 assistant-surgeons, with the rank of first lieutenant; and a hospital corps consisting of 250 hospital sergeants, who shall have the pay and allowances of hospital stewards; 100 pharmacists, with the compensation of $40 per month and the allowances of acting hospital stewards; 500 hospital corporals, with the pay and allowances of acting hospital stewards; and 3200 privates. *Provided*, That all vacancies in the grades of colonel, lieutenant-colonel and major created or caused by this section shall, as far as practicable, and subject to the prescribed examination, be filled by promotion, according to senority, as now provided by law. *Provided also*, That assistant surgeons shall have the rank of first lieutenant for the first five years' service, and that of captain after five years' service, subject to the examination now provided by law. *And provided further*, That the period during which any assistant-surgeon shall have served as a medical officer of the volunteer army during the war with Spain shall be counted as

a portion of the five years' service required to entitle him to the rank of captain.

Acting assistant-surgeons may be appointed by the surgeon-general, with the sanction of the Secretary of War, and under such regulations as may be prescribed by him, for temporary service, whenever imperatively necessary, at a compensation not to exceed $150 per month. *Provided*, That no one shall be so appointed until he shall have passed a satisfactory professional examination.

HOUSE BILL 11022, introduced by Mr. Hull. . . .

SEC. 11. That the Medical Department shall consist of 1 surgeon-general, with the rank of brigadier-general; 10 surgeons, with the rank of colonel; 20 surgeons, with the rank of lieutenant-colonel; 110 surgeons, with the rank of major; 360 assistant surgeons with the rank of captain or first lieutenant; and a hospital corps consisting of 250 hospital sergeants, who shall have the pay and allowances of hospital stewards; 100 pharmacists, with a compensation of $40 per month and the allowances of acting hospital stewards; 400 hospital corporals, with the pay and allowances of acting hospital stewards; and 3000 privates. *Provided*, That all vacancies in the grades of colonel, lieutenant-colonel and major, created or caused by this section, shall, as far as practicable, and subject to the prescribed examination, be filled by promotion, according to seniority, as now provided by law. *Provided also*, That assistant-surgeons shall have the rank of first lieutenant for the first five years' service, and that of captain after five years' service, subject to the examination now required by law. *And provided further*, That the period during which any assistant-surgeon shall have served as a medical officer of the volunteer army during the war with Spain shall be counted as a portion of the five years' service required to entitle him to the rank of captain. *Provided further*, That all vacancies in grade of assistant-surgeons shall be filled by competitive examinations, as now provided by law.

Acting assistant surgeons may be appointed by the Surgeon-General, with the sanction of the Secretary of War, and under such regulations as may be prescribed by him, for temporary service whenever imperatively necessary, at a compensation not to exceed $150 per month. *Provided*, That no one shall be so appointed until he shall have passed a satisfactory professional examination.

Medical Registration in Connecticut.—The regular examining committee of the Connecticut Medical Society has held eight special examinations during the year 1898, the last one on November 8. Seventy-five applicants were examined, five of whom were for midwifery only and seventy for general practice. Of the seventy general practitioners, thirty-nine were found qualified and twenty-one not qualified, while six were conditioned. Of the latter, three were afterward examined and found qualified. The results of the last examination have not been reported to the State Board. One of the rejected midwives was also re-examined and passed. This committee and the two other official examining committees have held a conference and decided to apply to the State Board of Health to appoint the time and place for examinations only once in four months, i. e., in March, July and November; that all examinations shall be written in English, and that at least 75 per cent. of answers must be correct to enable a candidate to pass, but that "conditions" may be allowed, if there are not more than two branches under a marking of seventy five, and the markings not less than fifty, with re-examination at the expiration of four months.—*Medical News*, December 3.

Hospitals.

By the will of Josiah B. Thomas of Peabody, Mass., $50,000 is left for the founding of a hospital in Peabody.—The new St. Luke's Hospital, Bayonne, N. J., was formally opened for patients December 3.—The Presbyterian Hospital, Chicago, has received $50,000 as a Christmas gift, from Mrs. Averell of Chicago, to endow a free ward of ten beds for men, to be known as the Albert J. Averell Memorial Ward.

Cincinnati.

HEALTH REPORT.—The Health Department reports an average of nine cases of chickenpox per day. The cases of smallpox at the branch are all doing well.

PERSONAL.—Dr. Lawrence Shields, who has held the position of resident physician at the Cincinnati Hospital for the last two years, has accepted the post of associate to Dr. Parsons of Mexico City.

Washington.

REPORT OF HEALTH OFFICER.—The report of Health Officer Woodward for the week ended December 10 shows the total number of deaths to have been 1119, 73 white and 46 colored. The principal causes of death were apoplexy, bronchitis, consumption, diphtheria, nervous, circulatory, genito-urinary, pneumonia, malignant growths, and typhoid fever. The total number of births was 127, 77 white and 50 colored. At the close of the week there were 122 cases of diphtheria and 12[illegible] cases of scarlet fever under treatment.

EMERGENCY HOSPITAL NURSES' HOME.—The new home for the nurses of Emergency Hospital, the gift of Mrs. Phebe Hurst, was formally opened, December 7. The hospital superintendent, Miss Simonton, received several hundred callers, all interested in hospital work. The home is located opposite the hospital, has the ambulance stable adjacent, and is connected with the hospital by electric signal. A large number of rooms in the hospital, formerly occupied by the nurses, will now be vacated, and the space used for the accommodation of patients.

COLUMBIAN GRADUATES IN THE ARMY.—At the recent competitive examination for Army surgeonships, none of the graduates of the Columbian Medical College failed. The list included Drs. James R. Church, surgeon of the Rough Riders, J. H. Ford and Dr. Wolf. The best examination was passed by J. H. Ford, member of the class of '97.

HOSPITAL FOR FOUNDLINGS.—At the 12th annual meeting of the Board of Directors of the Washington Hospital for Foundlings, recently held, Dr. Z. T. Sowers was elected president. The following staff was also elected: Drs. Z. T. Sowers, chief of staff, D. K. Shute, ophthalmologist; C. W. Richardson, laryngologist and M. F. Cuthbert, R. W. Baker, Samuel S. Adams and J. R. Wellington.

London.

HARVEIAN LECTURE.—The first Harveian Lecture was delivered this week by Dr. Wm. Ewart at St. George's Hospital and College. The series of three is to cover "Disease and its Treatment and the Profession of Medicine in 1899." The first lecture dealt with the present aspects of disease, and after a rapid sketch of the disappearance of many diseases and the diminution of others, the immense advances in our means of recognizing and treating them, etc., Dr. Ewart settled down to a broad and philosophic consideration of the interesting questions: "Can Disease Entirely Disappear?" "Will Such Approach to Disappearance as may be Expected Seriously Limit Our Usefulness and Field as a Profession?" The first of these questions he quickly answered in the negative, pointing out, as Clifford Allbutt pithily remarked some years ago, "Die we must, somehow," and every life saved from infections and diseases of malnutrition simply meant an adult to die later on of, say arterio-sclerosis or of cancer. It was theoretically possible for death by old age to be a purely natural, even physiologic, process, but practically it was extremely rare that all men "went to pieces all at once," like our beloved Holmes' immortal "One-hoss Shay." Some "weaker place can't stand the strain," gives way, and death occurs by what we term "disease." As to the effect of the diminution of disease upon the profession, he held that while it had perhaps temporarily diminished the amount of employment for us in certain directions, yet upon the whole it had distinctly widened our field so far. Our standards of health were much higher, there was a keen desire to avoid risk of disease, a determination to have even discomfort alleviated, on the part of the community which was bringing thousands of patients whom formerly we would never have seen. As he summed it up, "Disease has diminished, treatment increased." He cited American experience as bearing out this position and expressed the hope that the day would come when England would attain as high a standard of thoughtfulness and foresight in the removal of all possible conditions of disease and calling skilled attention to the very earliest symptoms "as obtain in Transatlantic Britain." He also referred to the wide field opening up to the profession in the supervision of education, and, in fact, took a strikingly similar position to that assumed editorially by the JOURNAL a few weeks ago.

MOLLUSCUM CONTAGIOSUM, CANCER, ETC.—At Mr. Jonathan Hutchinson's clinical demonstration last week a case of molluscum contagiosum was presented with the history that a generalized outbreak of the eruption had developed some three weeks after the patient had taken a Turkish bath. Upon

which the lecturer remarked that, in his experience, nearly every case of widespread molluscum contagiosum in an adult, had developed very shortly after taking a Turkish bath, and that he believed the disease to be often due to the use of infected "public" towels, vigorously applied to a softened and heated skin. It would be interesting to notice whether such a connection could be traced upon the other side of the Atlantic. It was also stated, in commenting upon a case of cancer, that in the lecturer's opinion the children of parents who married late in life were more liable to cancer than those of young parents. This was one of the factors in the increasing prevalence of cancer, as marriages occur usually at a much later age than formerly. The other and weightier factor was that cancer being a disease of adult or late middle life, and a larger proportion of children surviving to attain this age, the proportion of those in the community liable to its attack was markedly increasing. Mr. Hutchinson said that he had been much interested of late in the question of disease liability of the children of old parents, and asked for information from his hearers as to the truth of the statement that grafts taken from an old apple tree and inserted in a young root-stock would live only as long as the parent tree. Gardeners had assured him that it was an accepted rule among them that when the old tree died the grafts were sure to follow very shortly. If this be true it would appear that every part, even of a composite community like a tree, had a more or less definite and limited life expectation determined by that of the whole. Does this apply to our own tissues, including our generative cells, and has a race a life period like an individual?

Lord Lister, in his presidential address at the late annual meeting of the Royal Society, dwelt chiefly upon the late triumphs of preventive medicine and announced that Dr. Turner had discovered a method of protection against the terrible African rinderpest, by inoculation of serums along the line suggested by Koch and that 700,000 cattle had already been saved by it and there was hope of entirely eradicating it.

Philadelphia.

Dr. and Mrs. S. Weir Mitchell have sailed for Egypt, where they will spend several months.

Dr. William Pepper, Jr., who has recently recovered from a severe attack of typhoid fever, sailed last Saturday for the south of Europe and will cruise in the Mediterranean for several weeks.

Quarantine Against Rabid Dogs.—Dr. J. C. McNeal, of the Department of Public Safety of this State, has reported to State Veterinarian Leonard Pearson of this city that a large number of rabid dogs exist in the Sewickley Valley. At a recent meeting of the Live Stock Sanitary Board, called by Governor Hastings, at the request of Dr. Pearson, action was taken and all dogs in the Sewickley Valley were quarantined.

Gift Contested.—The will of Sarah Donnell, who recently bequeathed the bulk of an estate valued at $10,000 to various charitable institutions, including the Episcopal Hospital, is being contested by her sister, who recently filed a caveat with the Register of Wills. The ground on which the contest will be brought has not become public.

Visit to Southern Army Camps.—Dr. M. S. French, secretary of the National Relief Commission, left last week on a visit to the different army camps throughout the South. On his return trip Dr. French will visit the different hospitals along the Atlantic seaboard, including Savannah and Fort Monroe.

La Grippe Prevailing.—Early in the week a few scattered cases of grippe made their way to the hospitals. Later the school children became affected, and now it seems scattered abroad throughout the city.

Diagnosis Sustained.—It will be remembered that last week Dr. W. B. Atkinson of the State Board of Health was sent to investigate the suspicious cases of skin disease epidemic throughout the town of Bradford, Pa., and the surrounding country. Dr. Atkinson is reported as finding a number of cases with symptoms so manifest that he at once reported them as smallpox. This diagnosis seemed to startle a good many of the practitioners in Bradford, and they had no hesitancy in stating that the diagnosis was incorrect. A public meeting was called and rousing resolutions adopted setting forth the opinion that smallpox was not epidemic in the locality. However, smallpox has continued to spread throughout the city, and on December 11 twenty cases were reported. Dr. Benjamin Lee, secretary of the State Board of Health, also visited the place and concurred in the diagnosis as expressed by Dr. Atkinson.

Medico-Chirurgical College.—Plans are now under consideration for the erection of a laboratory for this medical college which, when completed, will cost several hundred thousand dollars. A plat of ground adjoining the property and extending along Cherry and Seventeenth Streets has been purchased. At the meeting of the trustees, to be held in January, it is rumored that the matter will be formally discussed, as up to the present time nothing has been decided as to the style of the proposed building.

Legislation for Pure Food.—Delegates from this city have been appointed to the Pure Food and Drug Congress which meets in Washington on January 18. The special duty of this Committee is to urge upon Congress ths importance of the Brosius bill now before that body, which provides against adulteration of food and drugs. Secretary Smedley is quoted as saying that the various exhibitions at the food show recently held here prove the ingenuity of the adulterants in counterfeiting both the flavor and appearance of food products to an alarming degree. For instance, strawberry jelly is made of glucose, gelatin, anilin dye and artificial flour; cayenne pepper is mostly gypsum; black pepper is largely gypsum and ground cocoanut shells; mustard is principally wheat flour, cayenne pepper colored with a poisonous drug known as Martin's yellow.

A Healer Without Drugs.—Mr. Carol Morton of New York recently gave an address in this city on "Christian Science," and is reported as saying that Christian science is in thorough harmony with the spiritual significance of the Bible. In fact, the Bible is the text-book mostly used. Christian scientists accept Christianity according to Christ instead of Christianity according to the dogmas of men. God, the Supreme Being, is certainly synonymous with nature. Health of body, like holiness or wholeness of character, is the normal condition of the image of God, man and woman. Jesus healed the sick and reformed the sinner by the same method. He did not use drugs or material methods. He operated through mental or psychic laws. Christian science has nothing to do with faith cure, spiritualism, theosophy nor hypnotism, but it can not agree that the practice of medicine is a science.

Students and the Municipal Hospital.—At the meeting of the city council last week, Dr. Walk, a member of that body, who offered the resolution providing that students of the different medical colleges be permitted to visit, for instruction, the patients suffering from diphtheria and smallpox at the Municipal Hospital, has not pressed the resolution as if he thought it would prevail. In fact, so much opposition has been created and ill-feeling engendered on account of this resolution, that instead of being its advocate at the last meeting of the council, Dr. Walk was absent, and it was given out that he will not press the measure any further.

For New Laboratories.—The committee appointed for the purpose of soliciting subscriptions for the new laboratories at the University, to cost $300,000, report that they have received much encouragement in the work. The plan is to enlist the 6000 medical alumni and thus form centers of local associations under one general alumni association, and thus unite all the graduates in medicine. This is the first general call for contributions from the medical alumni for improvements at the University, and much is hoped from this plan. Provost Harrison has stated that these new physiologic, chemic and pathologic laboratories would be the next building erected during the coming year, and that he would guarantee that one half the expense of the building would be $150,000.

Physician Resigns.—Dr. John M. Foyst, who has been for the past few years physician to Girard College, has resigned his position and will engage in private practice. The position pays a salary of $900 a year, and places a suite of rooms, meals and a servant at the disposal of the occupant. No successor has yet been chosen.

Appeal to Board of Health.—Residents of a certain district of Germantown, this city, have made a formal protest against the condition of a neighborhood of Pulaski Avenue, Morris Street and Chelten Avenue, which is being circulated among the residents of that locality to be subsequently turned over to the Board of Health. It is stated that during the past few months considerable sickness has occurred there and that many cases of diphtheria have existed, from which four deaths

have occurred. The locality is believed to be in an unsanitary condition, from the fact that large pools of water are said to form in the gutters, and that at the present time microbes abound.

MICROSCOPE OF FIFTY YEARS AGO.—Dr. J. Cheston Morris recently gave a lecture on "The Development of the Microscope," before the microscopic section of the Academy of National Sciences. He said that in 1850 there were upright microscopes of German and French make, and that one of the greatest improvements was the Ross stand, which enabled a person to examine an object at any angle. Achromatic lenses were made afterward, and many of the latest improvements were due to American opticians and mechanics.

MORTALITY STATISTICS.—For the week ending at noon, December 17, there had been 481 deaths, an increase of 45 over last week, and 30 over the corresponding period of last year. In children under the age of five years, 118 occurred.

FREE HOSPITALS FOR POOR CONSUMPTIVES.—The proceeds of the Philopatrian Ball will go toward the expense of these patients. Instead of erecting a new building for the treatment of these cases, certain wards will be set apart in those hospitals which will care for the tuberculous, and to them the proceeds will be distributed. The hospitals which have taken the greatest interest in this work are the St. Agnes and St. Mary's. The amount of money paid each week for the support of these patients is $5.00.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—Special Assignments: Col. Charles R. Greenleaf, assistant surgeon-general, U. S. A., to Savannah, Ga., and to such other places as may be necessary for the purpose of inspecting the medical department at that and other stations. Col. Wm. H. Forwood, assistant surgeon-general U. S. A., from the U. S. Soldiers' Home, Washington, D. C., to duty as chief surgeon department of California, San Francisco, Cal., relieving Lieut.-Col. Johnson V. D. Middleton, deputy surgeon-general U. S. A., on his retirement from active service. Major Henry S. Kilbourne, surgeon U. S. A., to report to the quartermaster-general as medical inpsector of transportation. Acting Assistant-Surgeon Aristides Agramonte to Havana, Cuba, on business connected with the study of the cause and prevention of yellow fever, under special instructions from the surgeon-general of the army.

Medical Supplies: Major John B. Hall, surgeon U.S.A., from mustering-out duty in Pennsylvania to San Francisco, Cal., to assume charge of the medical supply depot at that place. Major James E. Pilcher, brigade surgeon, Vols , from the Seventh Army Corps to duty as supply officer at Savannah, Ga.

To Santiago: Major Randall R. Hunter, brigade surgeon, Vols., from leave of absence to report to the commanding general; and Acting-Assistant Surgeons Frederick Hadra. Frederick W. Fabricius, from the Josiah Simpson General Hospital, Va., and John C. Greenewalt from Fort Thomas, Ky., all via New York City.

To Pinar del Rio: Acting Assistant-Surgeons George B. Lawrason and F. Medina Ferrer to report to Brig.-Gen. George W. Davis for duty with troops going to that province.

To Porto Rico: Major John Van R. Hoff, surgeon, U. S. A., assigned as chief surgeon of the Department. Acting Assistant-Surgeon E. A. Southall, via New York City to Ponce for duty with the Nineteenth U. S. Infantry.

To the First Army Corps: To report to the commanding general at Macon, Ga., Capt. Charles E. B. Flagg, assistant-surgeon, U. S. A., from the General Hospital at Fort McPherson, Ga.

To the Second Army Corps: Major Edgar A. Mearns, brigade surgeon, Vols., from the First Army Corps to Athens, Ga., for duty with the Third Division.

To the Fourth Army Corps: Major Henry D. Thomason, brigade surgeon, Vols., and the following acting assistant-surgeons to report to the commanding general at Huntsville, Ala.: R. E. Caldwell from Richmond, Va.; Charles Farmer from Lexington, Ky.; R. L. Taylor from the Josiah Simpson General Hospital, Va.; Edwin P. Wolfe from Washington, D. C., and J. Stebbins King from New York City.

To the Seventh Army Corps: Major Ira C Brown, brigade surgeon, Vols., to report to the commanding general: Major William S. Bryant, brigade surgeon, Vols., to Brig.-Gen. Lloyd Wheaton as chief surgeon, First Brigade, First Division, and Major George B. Bunn, brigade surgeon, Vols., to Brig.-Gen. H. C. Hasbrouck as chief surgeon, Second Brigade, Second Division.

To mustering-out duty: Major Ezra Woodruff, surgeon, U. S. A., from Fort Trumbull, Conn., to New York City for N. Y. Vols.; Major W. C. Borden, brigade surgeon, Vols., at Washington, D. C., for the Fifth Company U. S. Vol. Signal Corps; Major Richard W. Johnson, brigade surgeon, Vols., at Chicago, Ill., for the Seventh Company U. S. Signal Corps, and Capt. Henry R. Stiles, assistant-surgeon, U. S. A., at Portland, Me., for the Eighth Company, U. S. Vol. Signal Corps.

To duty at hospitals, etc.: General Hospitals: Major Benjamin F. Pope, surgeon, U.S.A., to Savannah, Ga., for duty pertaining to the supervision of the construction of the general hospital at that place, and as surgeon in command of the hospital when completed. To the Josiah Simpson Hospital, Va.: Major Edwin F. Gardner, surgeon, U.S.A., from duty with the Third Division, Second Army Corps. To the Hospital Ship *Relief*: Lieut. Weston P. Chamberlain, from the General Hospital, Fort Monroe, Va. To the Hospital Ship *Bay State*: Acting Assistant-Surgeons Charles E. Marrow from the *Relief* and Randolph M. Myers from sick leave in Washington, D.C. To the Hospital Transport *Mobile*: Acting Assistant-Surgeon Charles B. Mittelstaedt to Savannah, Ga. To the U. S. Hospital R. R. Train: Acting Assistant-Surgeon C. L. G. Anderson.

To duty at Military Posts: Major Louis A. La Garde, surgeon U.S.A., from Fort Robinson, Neb. to the U. S. Soldiers' Home, Washington, D.C., as attending surgeon. To the Washington Barracks, D.C., Acting Assist.-Surgeons C. B. Millhoff. from Johnstown, Pa.: Benjamin J. Edger, from the General Hospital, Fort Myer, Va., and Isaac W. Brewer, from sick leave in Washington, D. C. To Columbus Barricks, Ohio: Major William J. Wakeman, brigade surgeon, Vols., from sick leave, and Acting Assistant-Surgeons Harold W. Cowper, from Fort Myer, Va., and Louis T. Hess, from Washington, D.C. To Fort Adams, R.I.: Capt. George J. Newgarden, assistant-surgeon, U. S. A., from duty at Savannah, Ga. To Fort Leavenworth, Kas: Lieut. Basil H. Dutcher, assistant-surgeon, U.S.A., from Fort Grant, Ariz., and Acting Assistant-Surgeon Francis M. McCallum. To Fort Grant, Ariz.: Acting Assistant-Surgeon John E. Bacon, from Fort Hancock, N.J. To Fort Crook, Neb.: Acting Assistant-Surgeon John R. Hicks, from the General Hospital, Fort Monroe, Va.

Leaves of absence granted or extended: Majors Charles Richard and William R. Hall, surgeon, U.S.A.; Lieut. Clyde S. Ford, assistant-surgeon Fourth U. S. Vol. Infantry, and Acting Assistant-Surgeon E. W. Pinkham.

Sick leaves granted or extended: Major Wallace Neff, brigade surgeon, Vols.; Capt. John D. Howe, Assistant-Surgeon, Sixth Ohio Infantry; Lieut. Maurice C. Ashley, assistant-surgeon, First New York Infantry, and Acting Assistant-Surgeons Charles S. Stern, E. Van Hood and Isaac W. Brewer.

Resigned: Major Burton S. Booth, surgeon Two Hundred and Third New York Infantry; Major Salem Heilman, surgeon, One Hundred and Fifty-Seventh Pennsylvania Infantry; Lieut. F. L. Albritton, assistant-surgeon Sixth Ohio Infantry, and Lieut. Paul M. Mecray, assistant-surgeon Fourth New Jersey Infantry.

Honorably discharged: Major William H. Arthur, chief surgeon Vols. (Major and Surgeon U.S.A.) his volunteer commission only; Major Wallace Neff, brigade surgeon, Vols.

Contracts annulled: The following acting assistant-surgeons: From the General Hospital, Fort McPherson, Ga., James H. McCall, of Huntingdon, Tenn., Edwin M. Patterson of Washington, D.C., and James C. Ross of Salt Lake City, Utah. From Washington, D.C., Frank Garnett Young of Clarksburg, W. Va. From Fort Meyer, Va., Edwin C. Barstow of Washington, D.C. From the Josiah Simpson Hospital, Va., Wallace S. Chapman of Denver, Colo., and from the General Hospital at Ponce, P.R., John L. Goltra of Buffalo, N.Y.

CHANGE OF ADDRESS.

Allen, B. G., from Robbins, Tenn. to Somerset, Ky.
Brooks, S. D., from Port Townsend, Wash. to Nat'l Quarantine Station, Angel Island, Cal.
Brewster, B. H., from Hooper to Petrolia, Pa.
Campbell, J. G., from 5107 Lexington ave. to 6857 Wentworth ave., Chicago, Ill.
Chapple, C. L., from Asbury to Barrabas Hospital, Minneapolis, Minn.
de Beque, W. A. E., from De Beque to Youngerman bldg, Des Moines, Iowa.
Fenelon. M. P., from Ripon, Wis. to Cartville, La.
Graham, C. A., from 16th and Curtis street to box 764, Chicago.
Joslin, H., from Stedman bldg to 921 Logan ave., Denver, Colo,
Kreass, S. S., from 1316 to 1510 Walnut street, Philadelphia, Pa.
Loper, J. B., from 415 8th to 1213 25th, Des Moines, Iowa.
Parker, W. T., from Asylum Station to Westboro, Mass.
Paterson, R. N., from Oakland to 1606 California street, San Francisco, Cal.
Shortridge, W. R., from Elgin, Ill. to La Plata, Mo.
Sweeney, A., from 366 Wabasha street to Lowry Arcade, St. Paul, Minn.
Van Fradenburg, G. A., from Alcott to Manassa, Colo.
Wilson, H., from Lima, Ohio to North Loup, Neb.
Whalen, C. J., from 237 North Clark to 235 Dearborn ave., Chicago, Ill.

LETTERS RECEIVED.

Ammonol Chemical Co., New York City; Allen, E. E., Charlestown, Mass.
Burroughs, S. E., Allison, Iowa; Battle & Co., St. Louis, Mo.; Baker, H. B., Dighton, Mass.; Bedford Springs Co., Ltd., Bedford, Pa.; Bundy, Frank E. Lamp Co., Elmira, N. Y.; Bassett, M. L., Cleveland, Ohio; Behle, W. H., Salt Lake City, Utah; Burns, W. R., Deckerville, Ark.; Black, J. F., New York City; Belsheim, A. G., Iowa City, Iowa; Bromine-Iodine Chemical Co., Binghamton, N. Y.; Burroughs, S. E., Allison, Iowa; Barton, E., Portland, Ore.
Chicago Medical Book Co., Chicago, Ill.; Clark, David, Springfield, Mass.; Custer, H. J., Columbus, Ohio; Cheney, J. V., Chicago, Ill.; Card, S. W., Warrenton, Ga.
Dewey, R., Wauwatosa, Wis; Davis, R. C., Ann Arbor, Mich.; Dorman, H. W., Harbor, Ohio; Dickenson, J. B., Jersey, Ohio.
Elliott, A. R., New York City; Eagleson, J. B., Seattle, Wash.
Fischer Chemical Importing Co., New York City; Fairchild Bros. & Foster, New York City; Fries Bros., New York City; From, F. J., Templeton, Iowa.
Gardner, R. W., New York City; Galloway, D. H., Chicago, Ill.; Green, D. W., Dayton, Ohio; Gray, J. T., St. John, Kans.
Hicks Newspaper Adv. Agency, New York City; Hektoen, L. Chicago; Hutchinson, Woods, London, Eng.; Hilliard, W., Denver, Colo.; Henry, F. N., Detroit, Mich.; Hummel Adv. Agency, A. L. (2), New York City.
Judkins, O. P., Summerset, Iowa; Jones, C. C., Galveston, Texas; Jelks, J. T., Hot Springs, Ark.
Kindred, J. Jos., New York City; Kimbrough, P. M., Sheppardstown, Miss.; Kress & Owen Co., & The Viskolein Co., New York City; Kilbourne, H. S., New York City.
Lord & Thomas, Chicago, Ill.
Merrick, M. B., Passaic, N. Y.; McCassy, J. H. (2), Dayton, Ohio; Merck & Co., New York City; Moore's Newspaper Subscription Agency, Brockport, N. Y.; Maltine Mfg. Co., Brooklyn, N. Y.; Malt Diastase Co., New York City.
Nelson, G. T., Morris, Ill.; Norwich Pharmacal Co. (2), Norwich, N. Y. National College of Electro Therapeutics, Lima, Ohio.
Oliver Typewriter Co. (2), Chicago, Ill.
Pumphrey, R. J., Massillon, Ohio; Palmer, L. B., Petty, Texas; Plumbe, E. O., Rock Valley, Iowa; Paul, E. Derrick Adv. Agency, New York City; Peavy, J. F., Asheville, N. C.; Preston, C. H., Davenport, Iowa; Parmele Co., Chas. Roome, New York City; Phelps, A. V., Cincinnati, Ohio; Peacock Chemical Co., St. Louis, Mo.; Planten & Son, H., New York City.
Reed, C. A. L., Cincinnati, Ohio; Reed & Carnrick, New York City; Roberts, L. B., Philadelphia, Pa.; Roseburg, B., Florence, Colo.; Russell, R., Sun Bright, Tenn.
Sherin, W. M., Chicago, Ill.; Slocum, C. E., Defiance, Ohio; Smith, Kline & French Co., Philadelphia, Pa.; Scherer, E. A., San Carlos, Ariz.; Snorf, P. L., Piqua, Ohio; Sternberg, Geo. M., U. S. A., Washington, D. C.; Scherer, Otto, Detroit, Mich.; Schering & Glatz, New York City.
Thomas, A. L., Kirksville, Mo.; Thomas, H. A., Boston, Mass.; Trochet, Geo. B., Detroit, Mich.; Tyree, J. S., Washington, D. C.; Tuley, H. E., Louisville, Ky.; The Bovinine Co., New York City.
Upson, H. S., Cleveland, Ohio.
Vinyard, S. P., Kansas City, Mo.; Vito-Eclectic Sanitarium Co., Kansas City, Mo.
Waite, H. N., Johnson, Vt.; Walsh, W. H., Frederick, Md.; Watts, C. W., Moberly, Mo.; Wells, Geo. F., Guinda, Cal.; Wingate, U. O. B., Milwaukee, Wis.; Wood & Co., William, New York City.
Young, F., McConnelsville, Ohio.